Operation Manual

Issue C, July 2003 for Version 2 Software

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Digico (UK) Ltd
The School House
4 Dorking Road
Epsom
Surrey
KT18 7LX
England
Telephone: +44 (0)1372 845600
Fax: +44 (0)1372 845656
Email: sales@digiconsoles.com
WWW: http://www.digiconsoles.com

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Chapter 1
Getting Started

1.1 The Console

The Digico D5 consists of a worksurface, and 2 or 3 Input/Output Rack Units. The Rack Units are connected to the console by optical fibre and/or MADI links, which carry all the audio input and output signals.

The console worksurface consists of 3 Input Banks, and a Master Section.

Each input bank has 8 assignable faders and 8 sets of assignable on-screen channel controls, the Master Section has 16 assignable faders and a master fader. The Master section controls outputs, monitoring and configuration.

The console's buss architecture is dynamic, and can support mono, stereo, LCRS and 5.1 configurations.

Multiple console setups can provide:

Front of House and Monitoring with shared stage racks and gain tracking.

Redundant Mirroring of Front of House and/or Monitoring consoles.

Remote control of console via a wireless ethernet link with a laptop computer.

This manual is divided into chapters, each dealing with one aspect of the console.

- Chapter 1 is a quick start guide that provides an overview of the basic console functions.
- Chapter 2 describes how to use the assignment and channel controls provided on an Input channel bank.
- Chapter 3 describes the Output channels, including Group, Direct, Aux and Matrix Outputs.
- Chapter 4 describes most of the Master Section functions, including console configuration, monitoring, snapshots, and timecode and transport control.
- Chapter 5 describes the onboard Effects and Processing Channel Modules (standard on ex models).
- Chapter 6 describes the various functions of multiple console setups.
- Chapter 7 provides help with troubleshooting common problems.

1.2 Hardware

1) D5 Live 56 – 56 mic lines from stage
Surface
1 x 64 channel surface
Racks
Local rack – 8 mic/line in/32 line in/40 line out/16 AES EBU
Stage rack - 56 mic in/8 line out
1 x 150mtr optical drum

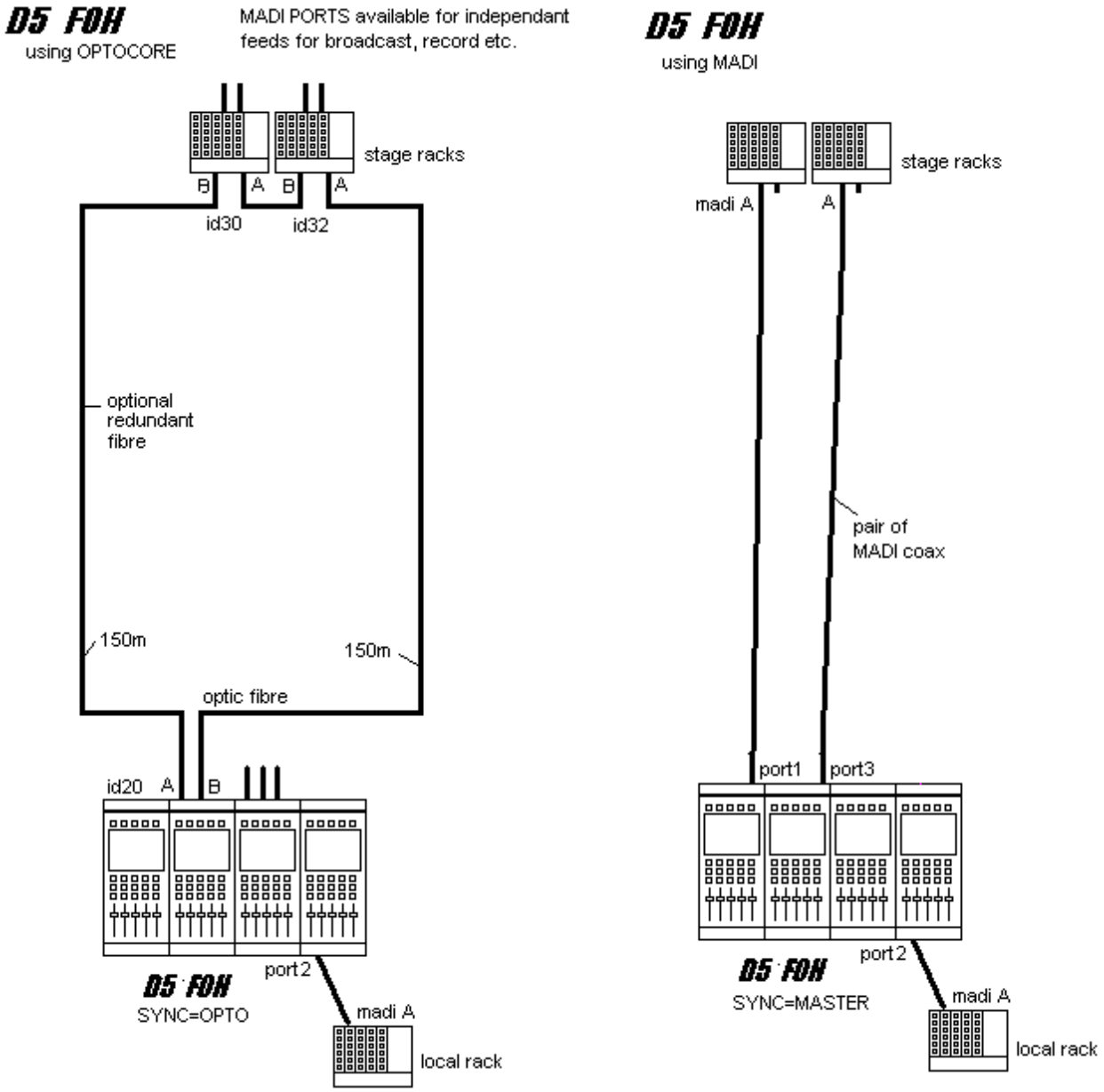
2) D5 Live 56EX – 56 mic lines from stage
Surface
1 x EX Surface
Mode a) 96 channel surface + 32 channels of F/X + 32 mix output channels with E/Q – Dynamics – Delay
Mode b) 128 channel surface **and choice of** 32 channels of F/X or 32 mix output channels with E/Q – Dynamics – Delay
Racks
Local rack – 8 mic/line in/32 line in/40 line out/16 AES EBU
Stage rack - 56 mic in/8 line out
1 x 150mtr optical drum

3) D5 Live 112EX – 112 mic lines from stage
Surface
1 x EX Surface
Mode a) 96 channel surface + 32 channels of F/X + 32 mix output channels with E/Q – Dynamics – Delay
Mode b) 128 channel surface **and choice of** 32 channels of F/X or 32 mix output channels with E/Q – Dynamics – Delay
Racks
Local rack – 8 mic/line in/32 line in/40 line out/16 AES EBU
Stage rack 1 - 56 mic in/8 line out
Stage rack 2 - 56 mic in/8 line out
1 x Optical link
1 x 150mtr optical drum

4) D5 FMX System – 112 mic lines from stage
Package
2 x D5 56EX Packages - 112 mic lines from stage
1 x extra 150mts Optic Cable on Drum – 1 x Optical link
Complete Specification: -
2 x D5 Surfaces – 112 mic lines from stage
Mode a) 96 channel surface + 32 channels of F/X + 32 mix output channels with E/Q – Dynamics – Delay
Mode b) 128 channel surface **and choice of** 32 channels of F/X or 32 mix output channels with E/Q – Dynamics – Delay
Racks
FOH local rack – 8 mic/line in/32 line in/40 line out/16 AES EBU
MON local rack – 8 mic/line in/32 line in/40 line out/16 AES EBU
Stage rack 1 - 56 mic in/8 line out
Stage rack 2 – 56 mic in/8 line out
1 x Optical link
3 x 150mtr optical drum

1.2.1 Connections .....

Detailed information on the various systems of connection is provided in the **Interconnection and System Setup Manual** but the following diagram provides an overview of a single console setup.
Detailed information on multiple console setups is provided in Chapter 6 of this manual.



1.2.2 The DiGiConfig Program .....

The following example shows how to run the DiGiConfig program from the D5 software in order to configure you hardware:

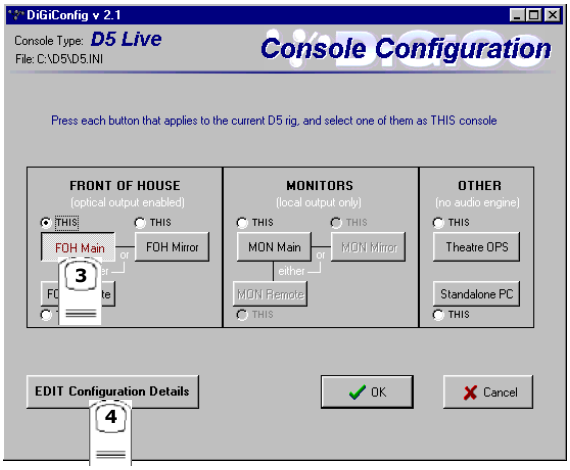
1) Open the **System / Service** menu.

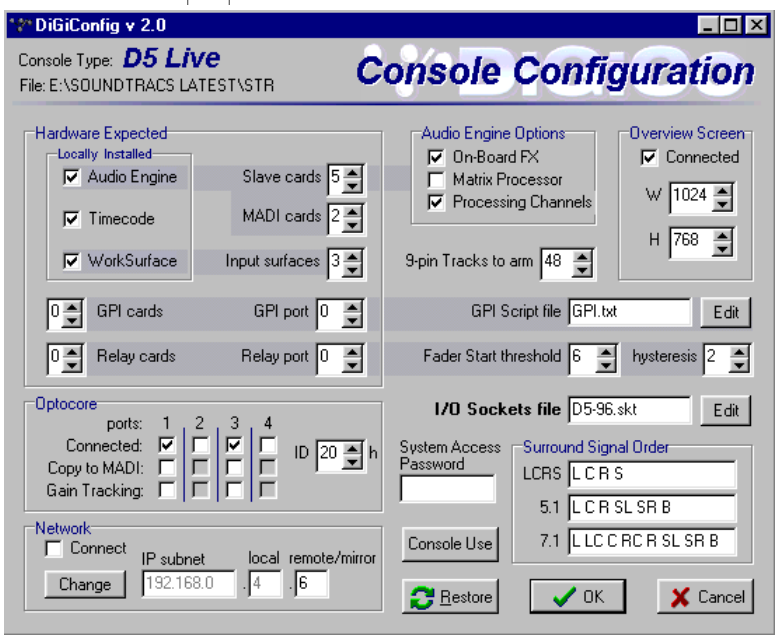
2) Press the **Configure Hardware** button, the D5 software will close and DiGiConfig will open.

3) Press the relevant buttons for all the consoles that you wish to configure - in the example, a single **FOH Main** console is selected. Press the **This** radio button to select the console that you are working on.

4) This will apply the correct configuration but the details can be further edited by pressing the **Edit Configuration Details** button.

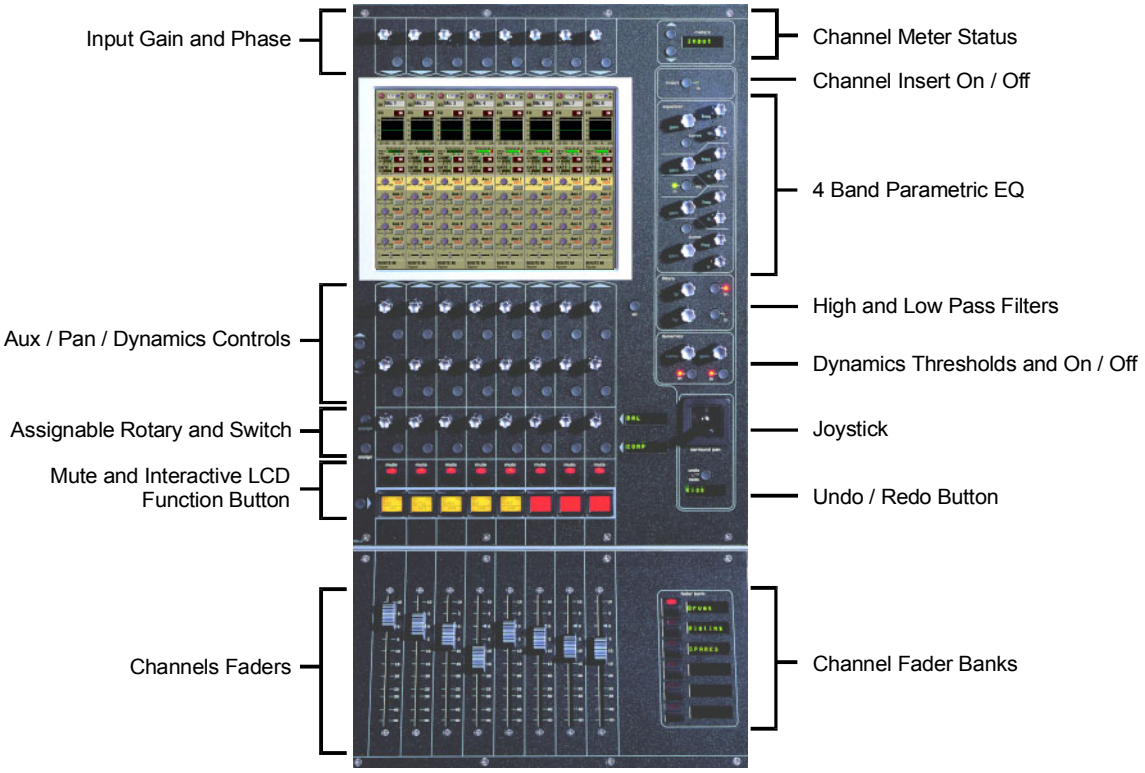
5) Press **OK** to return to D5 software.



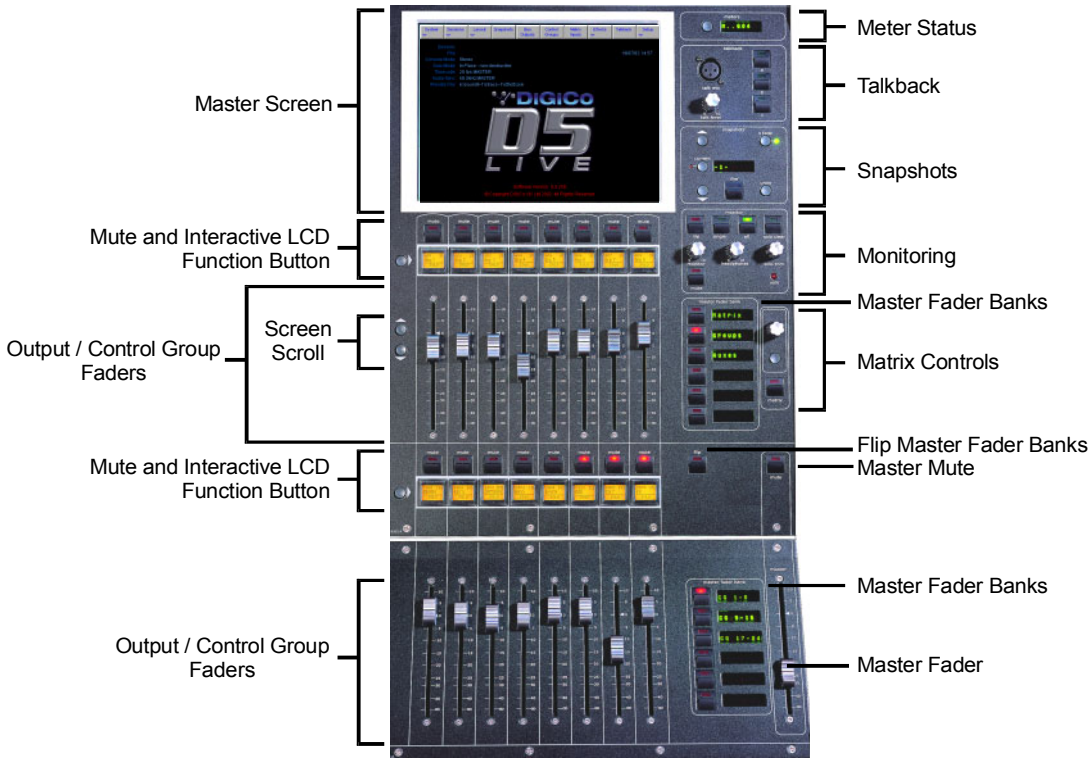


1.3 Getting Started

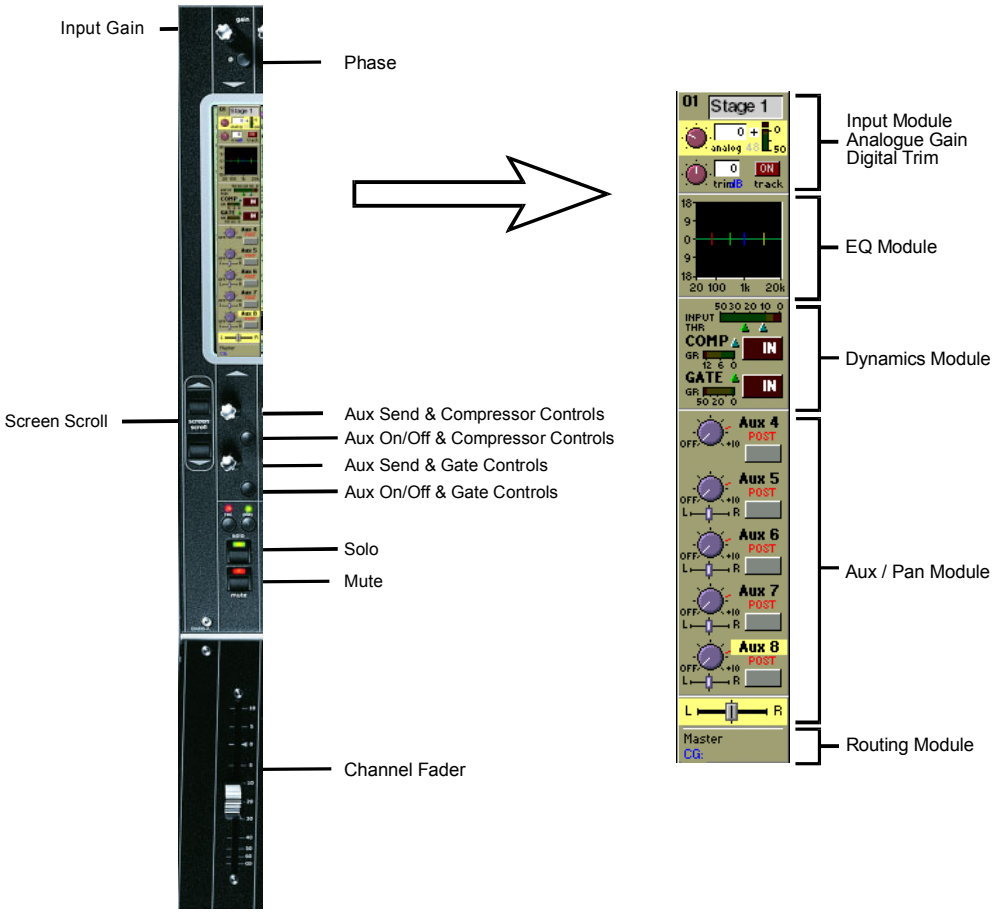
Input Section


Input Gain and Phase
Channel Meter Status
Channel Insert On / Off
4 Band Parametric EQ
Aux / Pan / Dynamics Controls
High and Low Pass Filters
Dynamics Thresholds and On / Off
Assignable Rotary and Switch
Joystick
Mute and Interactive LCD Function Button
Undo / Redo Button
Channels Faders
Channel Fader Banks

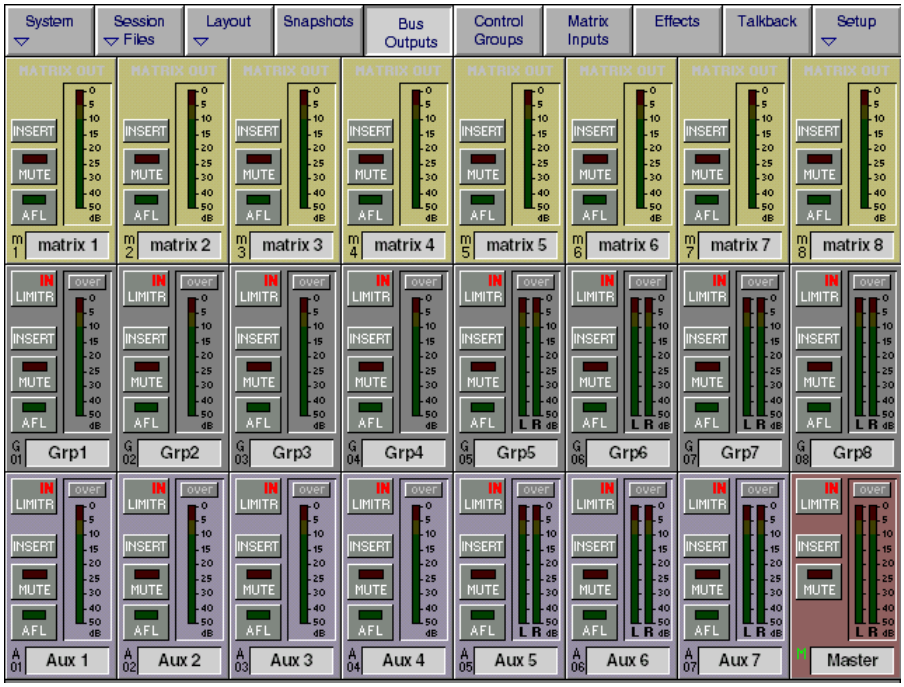
Master Section



Input Channel



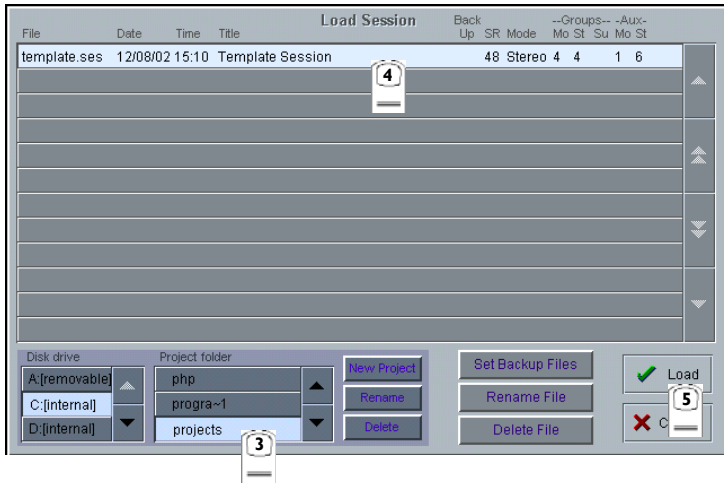
Master Screen



1.3.1 Loading the Template Session .....

A basic template session (default configuration) is provided with the console. To load it:

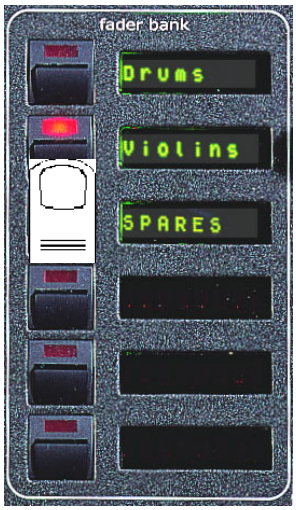
1) Touch the **Session Files** button at the top of the Master Screen to view the menu.
2) Touch the **Load Session** button in the Sessions menu to open the Load Session panel.
3) Touch the **Projects** folder button at the bottom of the panel to view its contents.
4) Touch the **template.ses** entry in the file list to highlight it.
5) Touch the **Load** button in the bottom right of the panel to open the session file.



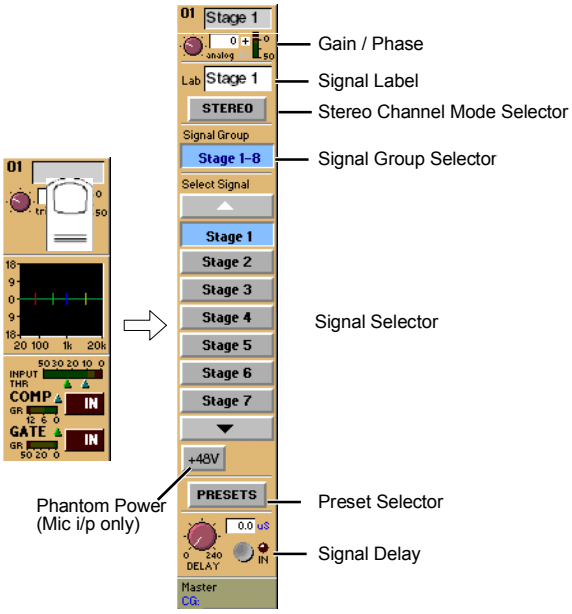
This will provide you with a configuration where 56 or 96 microphone inputs are already selected as input sources and some basic output routing is in place. However, the following instructions will help you to check or change the basic configuration and then save your custom setup as a new session file.

1.3.2 Selecting an Input Source .....

First select the **Fader Bank** that you require by pressing one of the bank of buttons next to the channel faders.
Holding a Fader Bank button for more than half a second will switch all input banks to view the same Fader Bank row.



You can display the **Input Module** for a fader by touching the top of the fader's on-screen channel strip, where the channel label is displayed. You can then hide the module by touching the same area again.



Input sources are divided into groups of signals eg. **Stage 1-8 or Line 1-16**.

To select an input source:

1) Touch the **top of the input screen** to open the input panel.

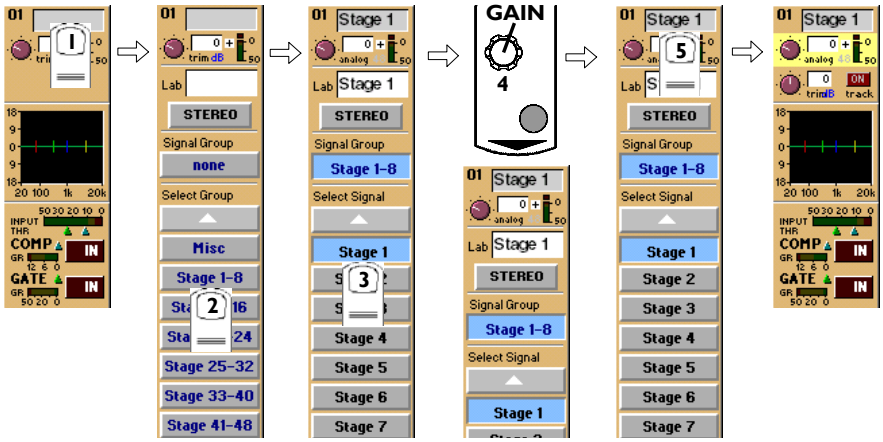
2) Touch the name of the **Signal Group** to view the signal names.

3) Touch the **name of the signal** to assign it to the channel.

4) Adjust the **gain** (analogue rack gain or digital trim selected by touching the required on screen control) with the **worksurface rotary control** at the top of the channel.

5) Touch the **top of the input screen** again to return to the standard view.

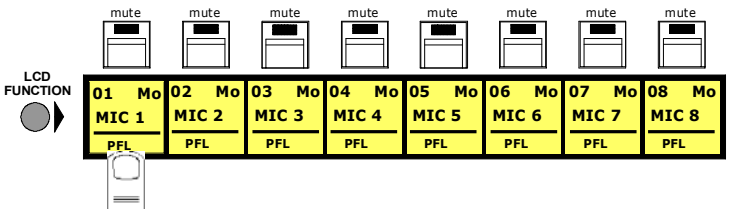
Note: Touch the **Lab** box and type a name for the channel if required.



If the **Stereo** is pressed, the input channel functions will control two input signals, the one which has been selected and the next one in the rack.

eg. If **Stage 1** is selected and the stereo button is pressed **Stage 2** will also be controlled.

To **Solo** a channel use the **Channel LCD Buttons** just below the mute buttons in the channel strip.



These are multi-function buttons and by pressing the **Channel LCD Function** button on the left hand side you can select which function they are currently assigned to.

1.3.3 Routing the Channel Signal .....

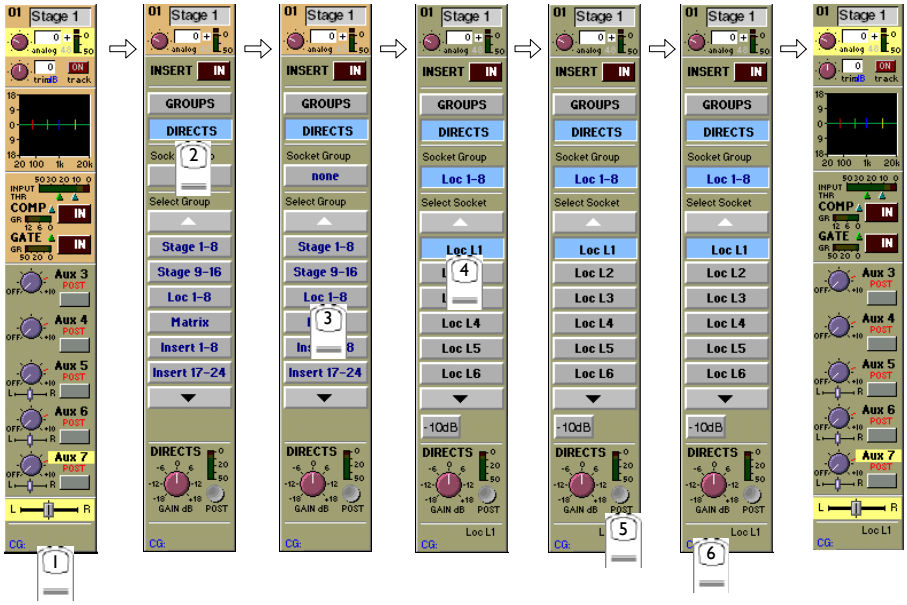
The channel signal can be routed to **Groups** and **Direct Outputs**.

To Route to a Group:

1) Touch the **bottom of the input screen** to open the routing panel.
2) Touch the **Groups button** if it is not already highlighted.
3) Touch the Group button(s) that you require eg. **Master, Grp1** etc
4) Touch the **bottom of the input screen** again to return to the standard view.

To Route to a Direct Output:

1) Touch the **bottom of the input screen** to open the routing panel.
2) Touch the **Directs button** if it is not already highlighted.
3) Touch the name of the **Socket Group** to view the output socket names.
4) Touch the **Output Socket button(s)** that you require eg. **Loc L1, Loc L2** etc.
5) Touch the **Pre/Post button** to specify the position of the Direct Out, relative to the channel fader, in the signal path.
6) Touch the **bottom of the input screen** again to return to the standard view.

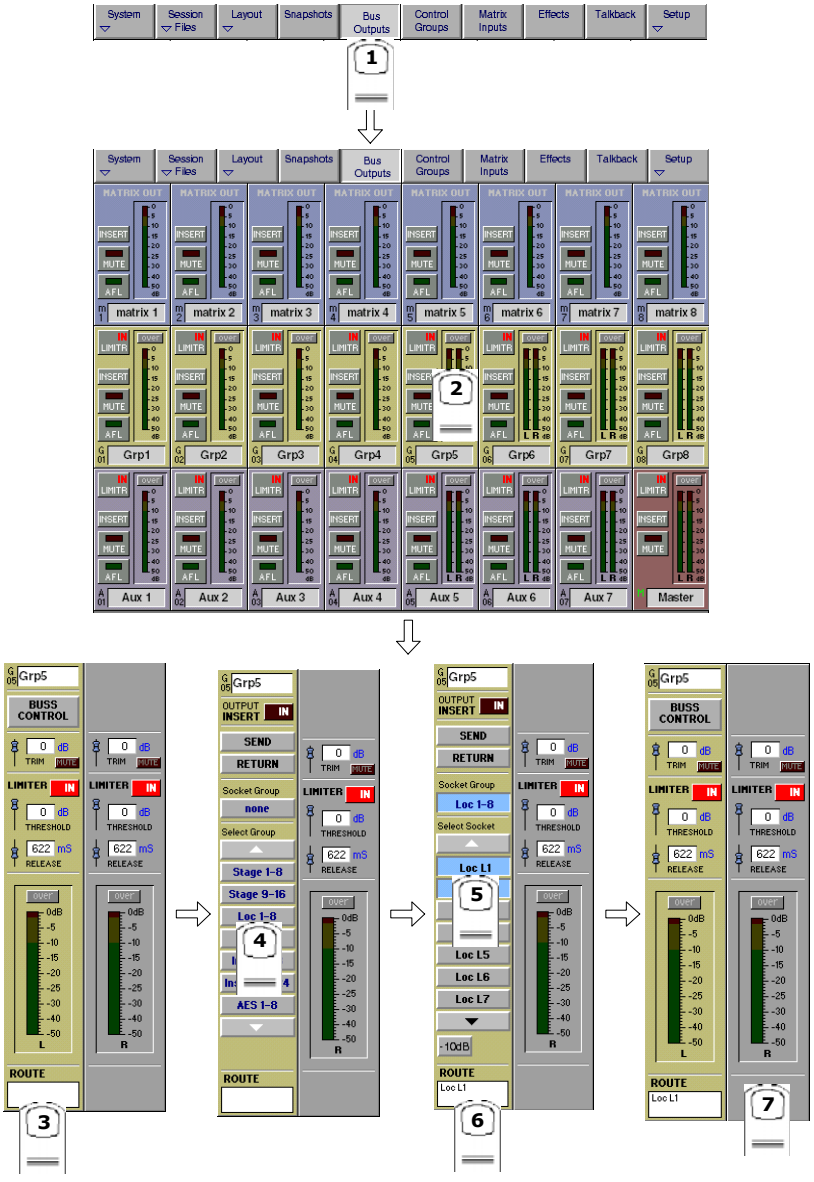


1.3.4 Routing Busses To Outputs .....

The Master, Group, Auxiliary and Matrix busses must be routed to output sockets as part of the initial configuration.
This is achieved by using the buss output routing panel in the Master Screen:

1) Touch the **Buss Outputs button** at the top of the master screen.
2) Touch the **on screen meter** of the relevant buss to expand the view.
3) Touch the **Route button** at the bottom of the panel.
4) Touch the name of the **Socket Group** that contains the output you require **eg. Loc 1-8.**
5) Touch the **Output Socket button(s)** that you require eg. **Loc L1, Loc L2** etc
6) Touch the **Route button** at the bottom of the panel to close the routing.
7) Touch the area around the on screen meter to return to the standard view.
8) Press the **Master Fader Bank** button for the relevant row of outputs to adjust the output level with the worksurface master faders.

NOTE: For a stereo buss, select the output for the left hand signal and the next consecutive output is used automatically for the right hand signal.



1.3.5 Save As New File .....

When you change the configuration of the template session you should save it to the console's flash drive under a new filename.

1) Touch the **Session Files** button at the top of the Master Screen to view the menu.

2) Touch the **Save as New File** button in the Sessions menu to open the panel.

3) Touch the **Projects** folder button at the bottom of the panel to select the file destination.

4) Touch the **New Filename** box and type the chosen name **(with a maximum of 8 letters and no punctuation)**.

5) Touch the **Session Title** box and type a description of the session if required.

6) Touch the **Save** button in the bottom right of the panel to save the session file.

Note: If you touch a session name on the existing list, this name will automatically be selected as the new file name and touching Save will overwrite the old file.

1.3.6 Save Session .....

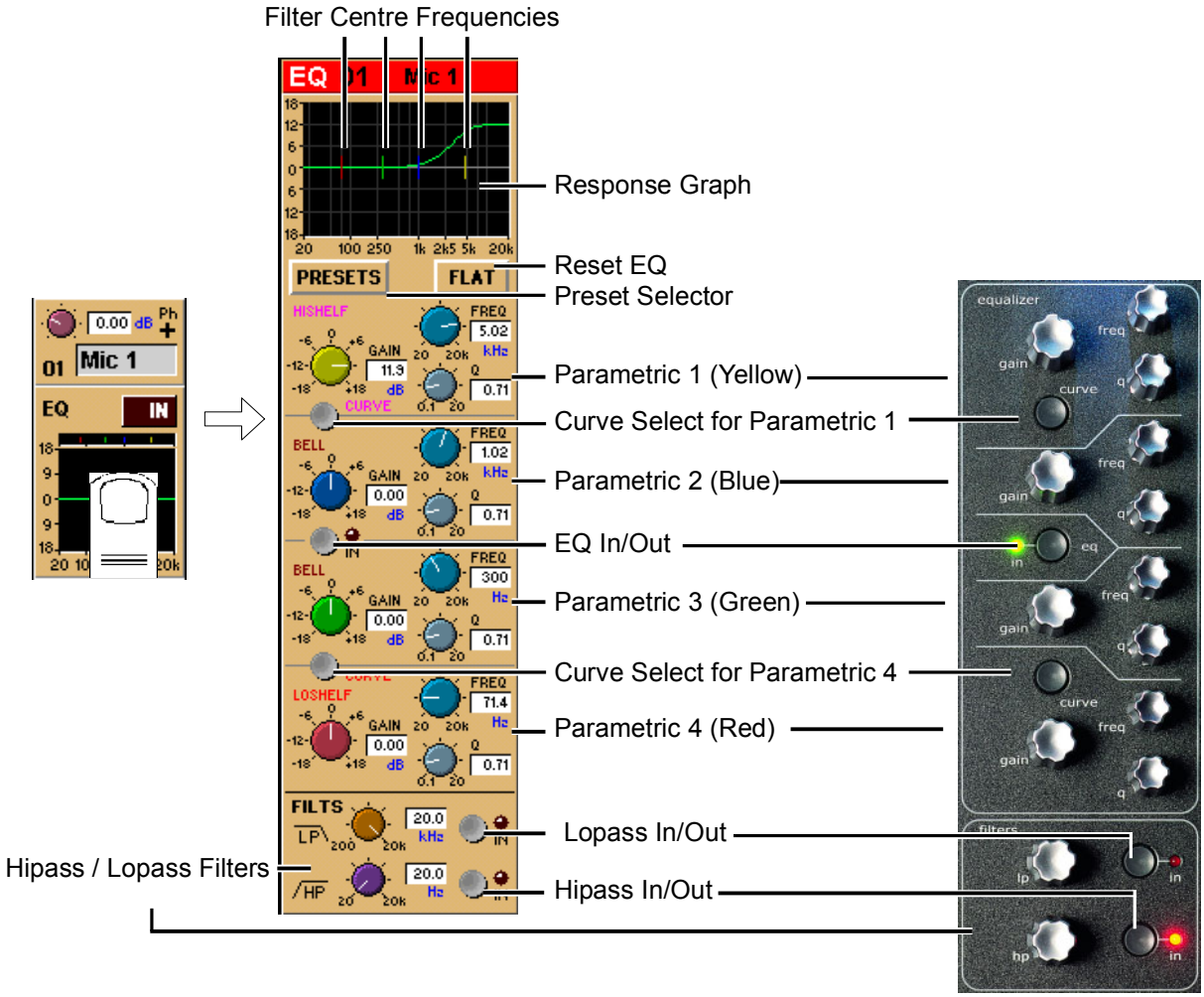
This button which is found above the **Save As New File** button will save the existing session in the same location and under the same file name as it was previously saved or loaded from. It therefore serves as a "**Quick Save**" option to update an existing session.

Remember that this function will overwrite your last saved version.

If you wish to save the session under a new name use the **Session Files** menu button and select **Save As New File** (See above).

1.3.7 EQ .....

The EQ section comprises four user-configurable parametric filters and a pair of swept High-pass and Low-pass filters.
The EQ is accessed by touching the on screen display to **Assign** the channel (**the colour changes to orange**) and then using the controls on the right hand side of the input module.
When a control is adjusted the expanded view seen below appears in the input screen but this view can be seen at any time by touching the EQ response graph on the screen.
NOTE: If the expanded view does not appear when a control is adjusted open the **System / Options** panel and press the **Automatically expand EQ view when adjusted button.**

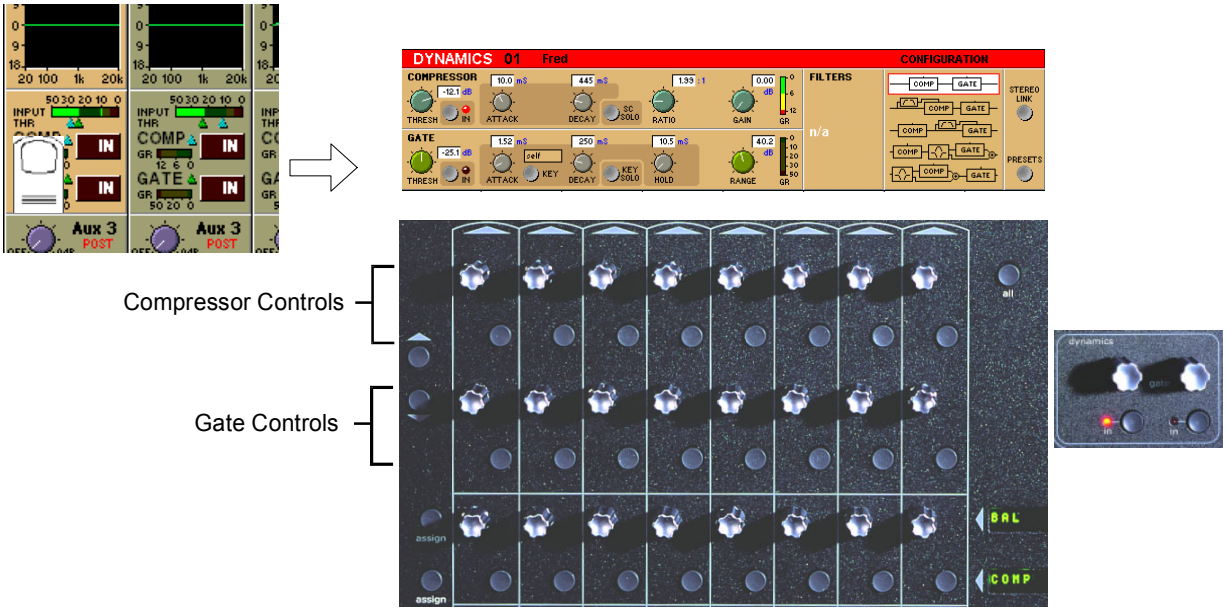


Note: The four band EQ and each of the filters have their own in/out switches.
The type of filter used by bands one and four can be changed by successive presses of the **Curve Select** button for that band. There are three possible settings for each band.

1.3.8 Dynamics .....

The dynamics are accessed by touching the words **Comp** or **Gate** just below the EQ graph on screen to open the dynamics panel. The worksurface controls beneath the screen control the various parameters. Touching the panel again will close it.

Dedicated **Threshold** controls and **In/Out** switches can be found on the right hand side of the input section worksurface. These can control the Assigned channel's dynamics whether the on screen dynamics panel is open or not.

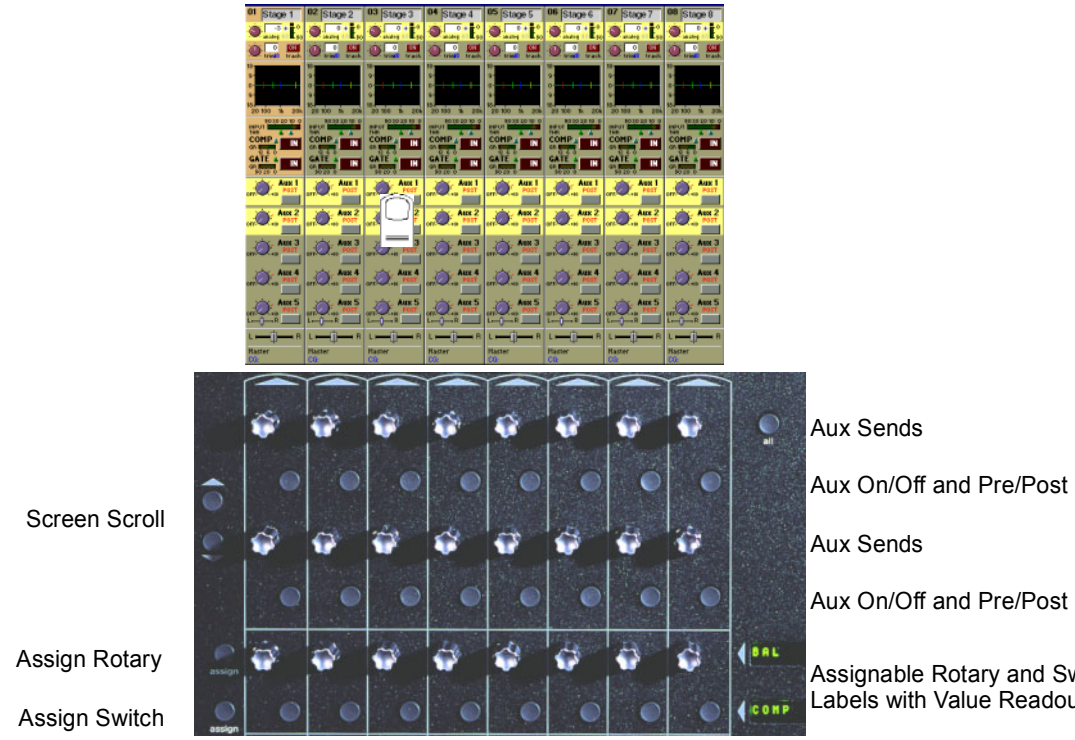


The third row of buttons in the input section can be assigned to any of the dynamics on/off switches. Hold the **Assign Switch** button on the left of the input section and touch the dynamics section on the screen. The selected control is shown by the **Status Display.**

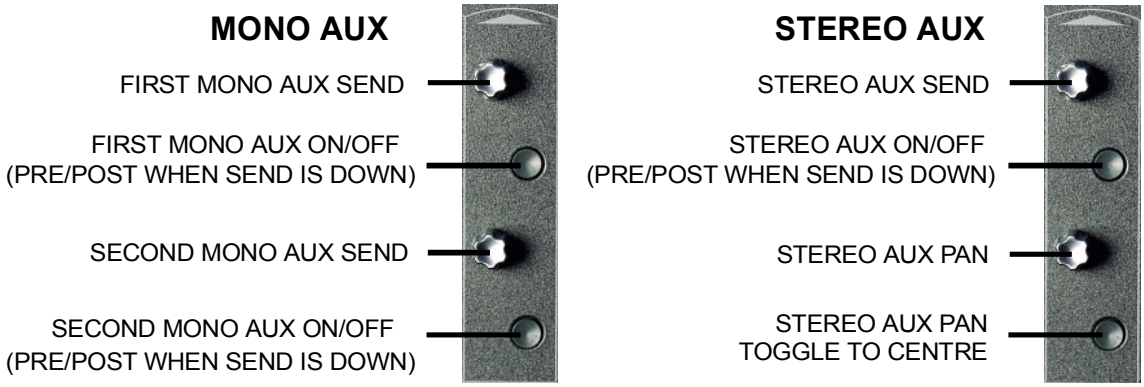
Note: These switches can also be assigned to other functions - **See section 2.1.3**

1.3.9 Auxiliaries .....

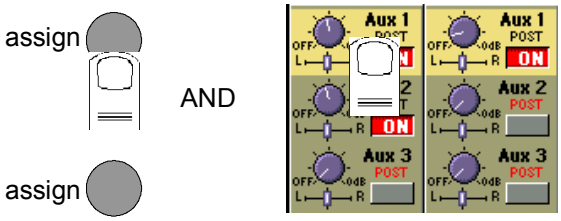
The auxiliaries are accessed by touching the auxiliary row on screen or using the **Screen Scroll** buttons on the left of the input section.



Using either of these methods, the highlighted auxiliaries on the input screen will change. The rotary controls and switches beneath the screen are used as auxiliary sends, pans, on/off and pre/post switches in the following way.



The third rotary control and button in the section can be assigned to any of the auxiliary sends or on/off switches. Hold the **Assign Rotary** or **Assign Switch** button on the left of the input section and touch the required auxiliary row on the screen. The selected auxiliary name is shown by the **Assignable Rotary Display.**



1.3.10 The Matrix .....

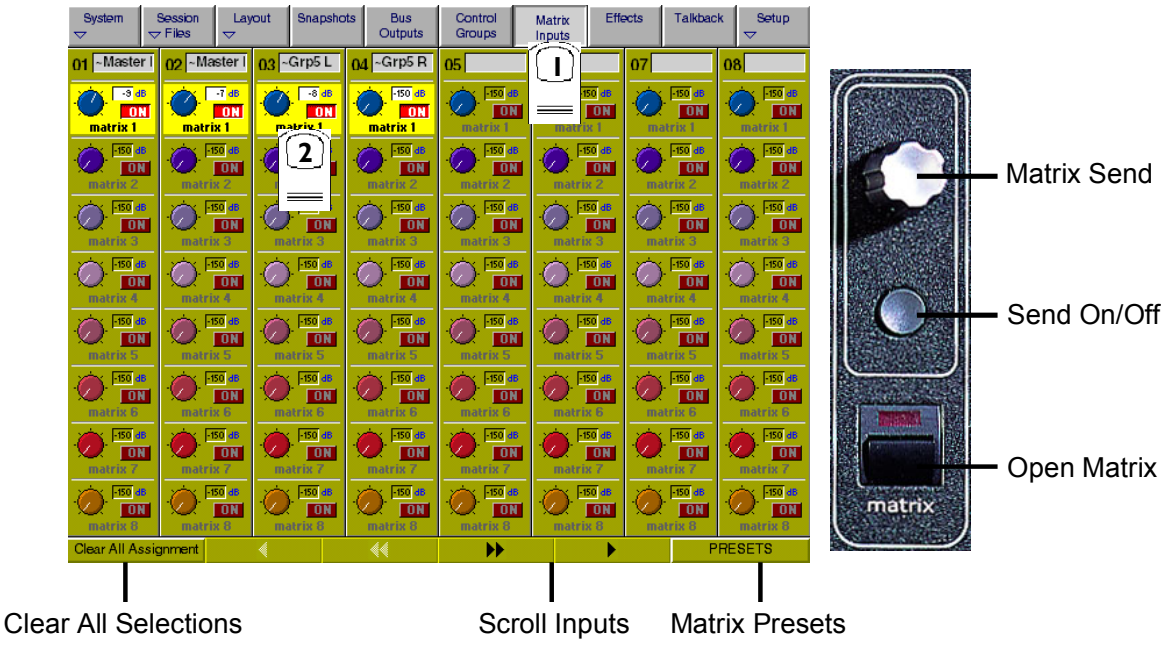
The 38x8 way matrix is accessed by touching the **Matrix Inputs** button on the master screen or the **Matrix** button on the far right of the worksurface master section.

Inputs are selected in the same way as the input channels (See Section 1.3.1).

Touch the on screen matrix send controls to select which ones you wish to adjust and they will become highlighted.

Use the worksurface **Matrix Send** control and **On/Off** switch to adjust the settings for all highlighted sends.

At the bottom of the panel there are buttons to **Clear All Assignment**, **Load and Save Presets** and **Scroll** buttons to view the other inputs.



1.3.11 Control Groups .....

Any number of input channels and output channels can be connected to one or more of the 24 Control Groups. They can then all be operated from a single worksurface control. Changes to the Control Group fader, mute or solo or controls will affect all channels connected to the group.

To set up Control Groups:

1) Touch the **Control Groups** button on the Master screen.

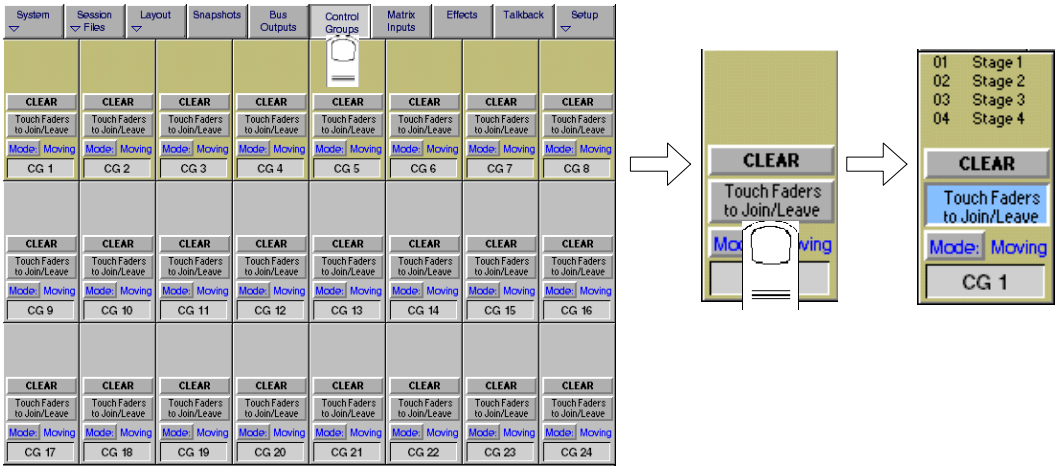
2) Touch the **Touch Faders To Join/Leave** button on the required Control Group (1-24).

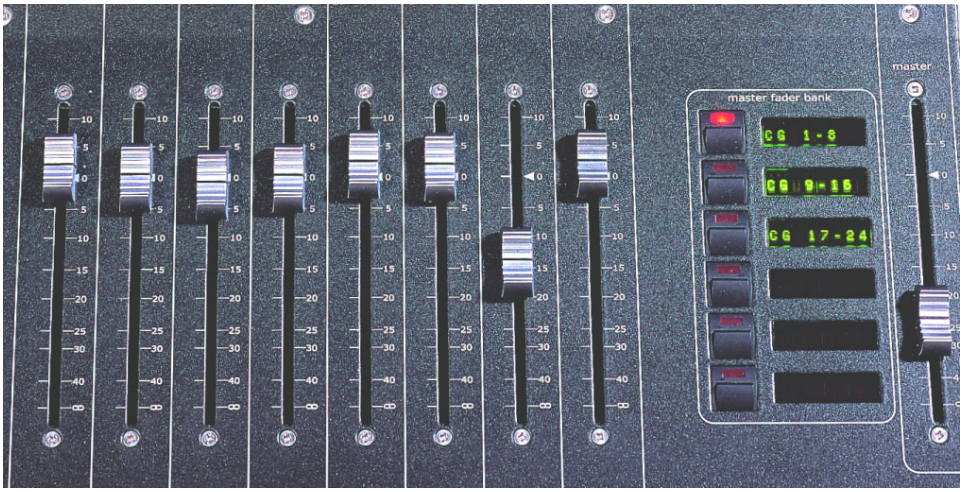
3) Touch the **faders** on the channels that you want to include. (Touching the fader again will remove it from the group).

4) Touch the **Touch Faders To Join/Leave** button again to turn the function off.

5) Press the on screen **Mode** button to select **Moving** faders, **VCA** style static faders or **Mutes** only.

6) Use the worksurface fader, mute and solo to adjust settings for the Control Group members.





A list of all the connected channels and their names is displayed above each Control Group display, touch the area above the **Clear** button to expand this list.

When a fader is touched it is highlighted in the list.

You can also clear all the channels from a Control Group by pressing **Clear**.

When a channel is a member of a Control Group, its own controls can still be adjusted independently of the other Group members. Adjustments to fader levels are transmitted to the Group members as dB changes, so that a level increase of 2dB on the Group fader will increase all the member levels by 2dB, irrespective of the relative levels of the individual channel faders.

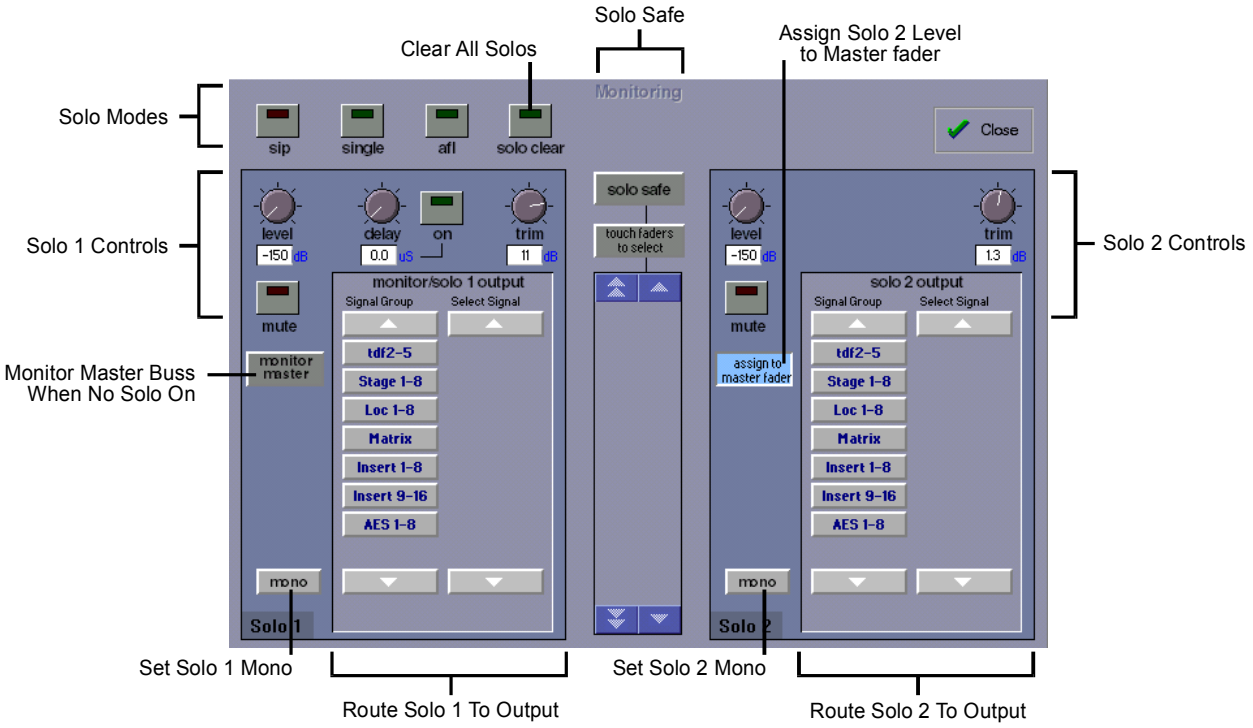
1.3.12 Master Fader Banks .....

The faders in the console Master section control the output levels for busses, auxiliaries and the matrix. To select a bank, press the relevant **Master Fader Bank** button for the **Upper faders.**

1.3.13 Monitoring .....

The **Monitoring** panel can be found under the **Setup Menu** on the Master Screen and some of the controls can be accessed on the right hand side of the Master worksurface.

It may be accessed at any time to change the monitoring setup.



There are two solo busses and each console solo button can be independently assigned to use Solo 1 or Solo 2 with a total of 16 inputs available to each solo buss..

Therefore, if the console was being used for stage monitors, the first solo buss could feed an "in ear" monitor and the second solo buss could feed a wedge.

To use **Solo 2** there must be sufficient busses available (at least two) and if Solo 2 does not appear on the panel a new session should be created to make these busses available.

The dedicated worksurface buttons control the relevant Monitor/Solo 1 functions and the Solo 2 level and trim may be controlled by touching the on screen control and using the Matrix rotary control on the worksurface.

For more information on Monitoring and Solo options see Section 4.2.9.

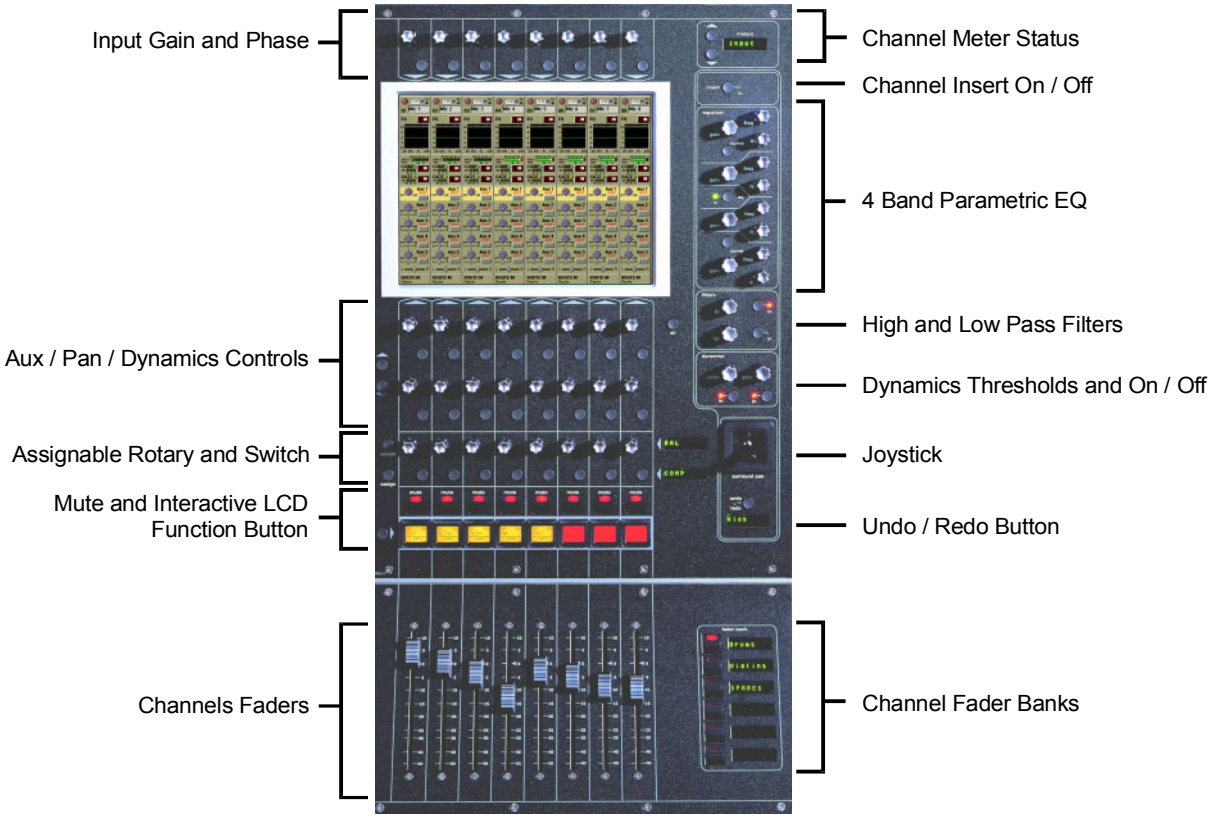
Chapter 2
Inputs and Console Channels

2.1 The Input Channels

The console Worksurface consists of a Master section, and three "Banks" of faders for controlling input channel or auxiliary levels. Internally, the console has 64 (D5 56) or 96 /128 (D5 112EX and D5 56EX) processing channels.

2.1.1 Channel Assignment .....

The assignment of audio input channels to faders on the D5 worksurface is "soft", so that there is no direct link between channels and faders. The console has either 56 or 112 inputs which are then assigned in blocks of eight to the console's physical fader banks.


Input Gain and Phase
Aux / Pan / Dynamics Controls
Assignable Rotary and Switch
Mute and Interactive LCD Function Button
Channels Faders
Channel Meter Status
Channel Insert On / Off
4 Band Parametric EQ
High and Low Pass Filters
Dynamics Thresholds and On / Off
Joystick
Undo / Redo Button
Channel Fader Banks

When you want to access an input channel which is not currently visible on a worksurface channel, press the relevant **Fader Bank** button on the console worksurface.

Note: Holding a Channel Fader Bank button for more than half a second will switch all input surfaces to their equivalent bank for the same bank button

2.1.2 Worksurface Channels .....

Each fader bank has eight channels. Each channel has a Mute switch, an Interactive LCD button which performs a number of different functions and assignable rotary controls and switches to control auxiliaries and dynamics functions.

As well as a number, each channel has a Label which you can define. Labels can be up to 31 characters but only the start of the label will be displayed. The number of characters displayed depends on the character width.

Above the faders on each bank, the touch-screen provides access to the routing and processing for each channel.

2.1.3 Input Screen - The Standard View .....

In the screen's Standard View, each on-screen channel is shown in abbreviated form.

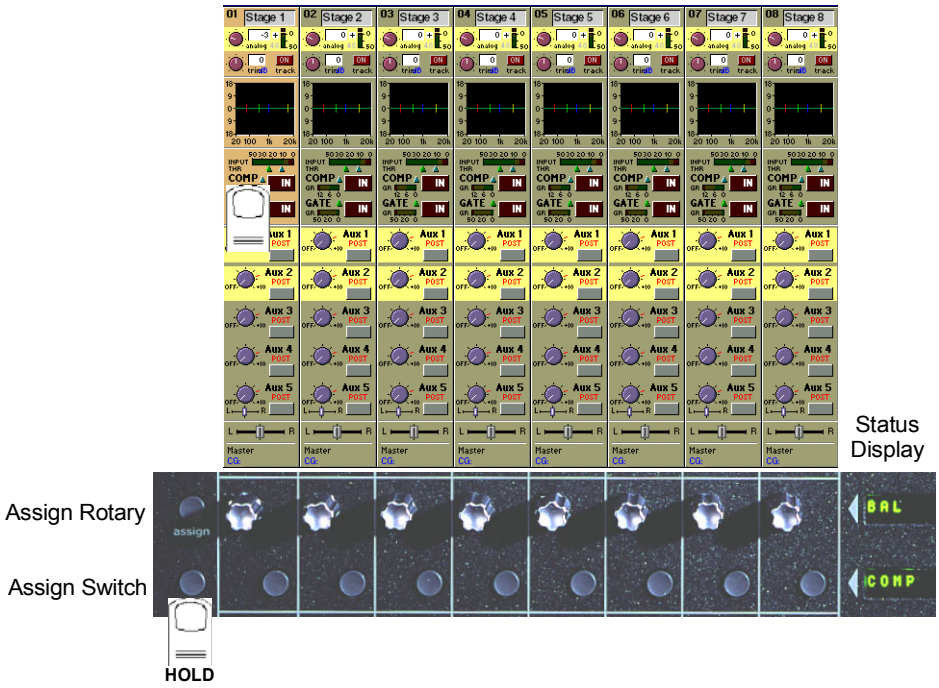
The controls around the screen operate as follows: detailed information about each particular control is given later in this chapter.

Upper row - Channel Input Gain and Phase.

Lower row - the first two rows of controls below the screen are used to adjust the channel's Pan position, Auxiliary sends and Dynamics parameters.

The third row of controls can be assigned to any of the following functions by holding down the **Assign** button and touching the chosen control on the Input screen.

Assignable Switch	Assignable Rotary
Set channel delay to zero	Channel delay time
EQ In/Out	Aux level
Compressor or Gate In/Out	Stereo panning
Aux On/Off	Direct Output Gain
Set Pan position	Insert Send Gain
Insert In/Out	
Direct Output PreM/Pre/Post	



The on-screen channel strip is normally coloured grey, but one or two of the Aux/Pan controls are highlighted in a different colour, indicating that these controls are currently assigned.

You can scroll the assignment up and down the list of Aux/Pan controls using the two **Screen Scroll** buttons on the left hand side of the section or by touching the control on the screen. Surround panning is operated using both rotaries, but is easier to adjust by selecting the channel and using the joystick.

2.1.4 Input Meters .....

Note that the meter above the channel display will show the input signal level for that channel but if the Meter Buttons to the right of the Input screen are pressed the meter can show any of the following:

Input / Gate GR / Compressor GR / Direct Out / Insert Send

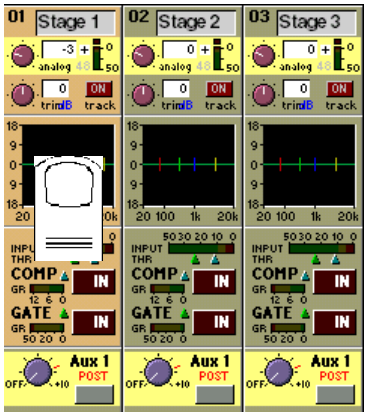
The meter display buttons allow you to scroll through the options.

2.1.5 Assigning a Channel .....

To assign one of the on-screen channels so that you can adjust the EQ or Dynamics settings or use the Joystick, touch the on-screen display of the channel anywhere in the EQ or Dynamics area. (Not on the In / Out switches)

The background colour of the channel changes to show that it is selected.

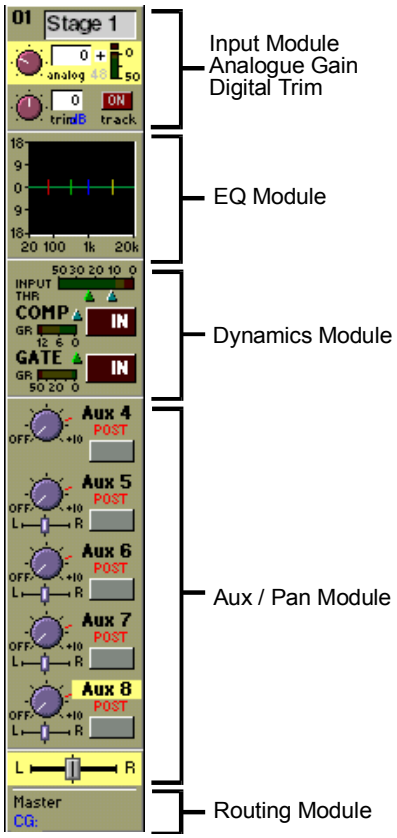
Touching the IN /OUT buttons will switch the relevant processing module ON or OFF.



There is also an option to assign a channel by either touching its fader or pressing its solo button. **See Section 2.2.8 Channel LCD Function Buttons.**

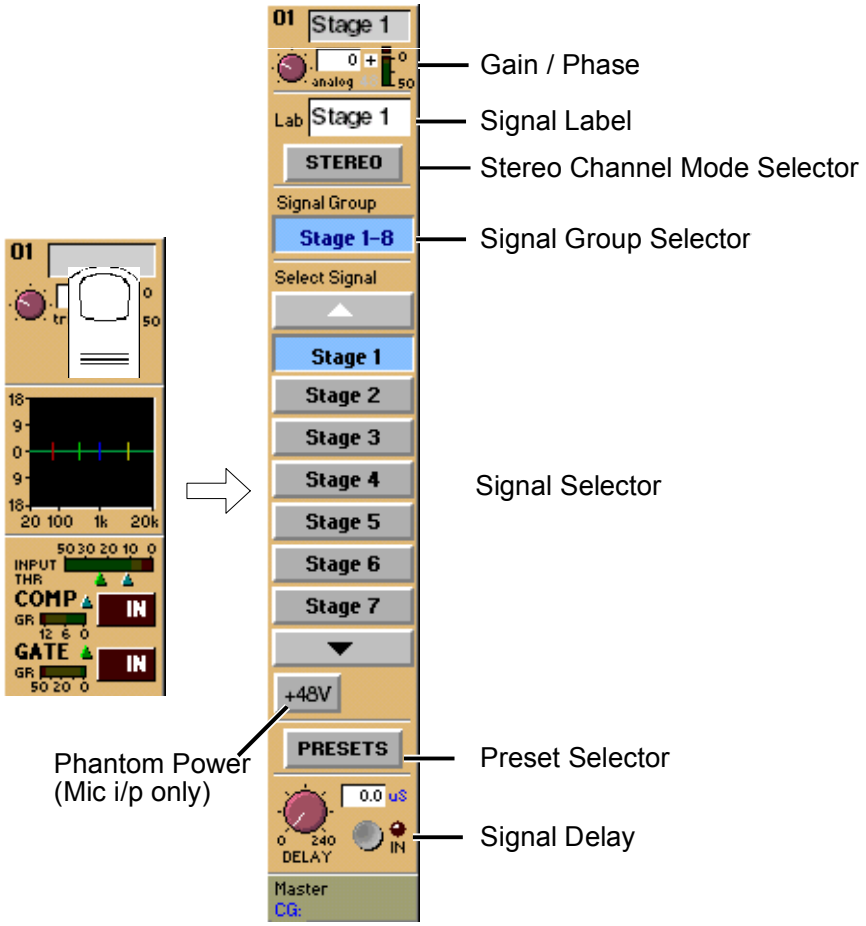
2.2 Expanding a Processing Module

Once you have selected a channel, you can choose to view any of the processing Modules in more detail by touching the abbreviated display of the section. There are five areas of the channel you can touch to see the module in more detail:



2.2.1 Input Module .....

You can display the Input Module for a fader by touching the top of the fader's on-screen channel strip, where the channel label is displayed. You can then hide the module by touching the same area again.



The Input Module contains the following controls:

Channel Label

To alter the Label, touch the Label area, then type the new label on the keyboard. Labels can be up to 31 characters long, but only the start of the label will be displayed depending on the character width.

Signal Group

The input sockets are arranged into named "Groups". To display the signal groups, touch the Signal Group Selector area as shown above. You can then touch the button for the group you want.

"Misc" Signal Group

The Misc group contains the console's internal signal sources and sockets, including signals from the worksurface and rear Talkback microphones, and the internal Noise and Tone generators.

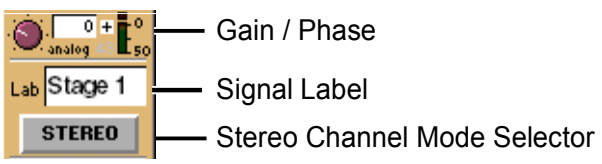
The original talkback sources (the unprocessed microphone inputs) are labelled Talk Mic L (Top) & R (Rear).

The post-processing results from the talkback input channels are labelled Talkback A & B.

Select Signal - Signal in Group

To select a source, touch the button for the signal you want to connect to the channel. If there are more than five channels in the group, you may need to use the scroll buttons (top and bottom) to display the button for the signal you want.

Stereo Channel Mode Selector



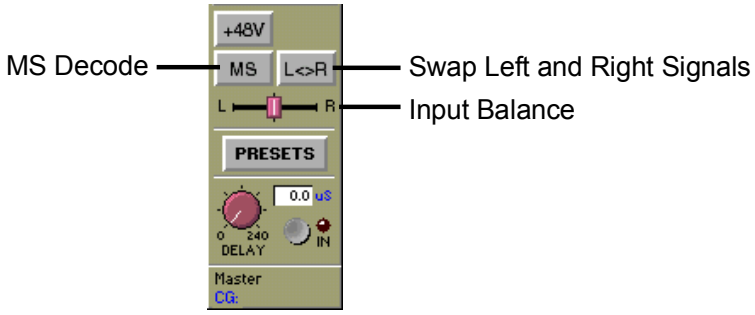
If this button is pressed, the input channel functions will control two input signals, the one which has been selected and the next one in the rack.

Input source, Direct output, Insert Send and Insert Return will all function as adjacent pairs so making a selection for the left signal will result in an automatic selection for the right signal.

Processing for the right signal is taken from the highest numbered channel available which has no input route or insert return route selected. The channel which is used will no longer be available for normal operation. This is indicated by a white channel number.

Stereo channels show all signal meters as pairs. Gain reduction meters in dynamics are also shown as pairs, but with the dynamics stereo link switched on, only the larger gain reduction of the pair is used for both sides of the stereo channel. The meter bridge shows two peaks for stereo inputs.

The stereo channel display will change in the following way:



The following additional functions are made available:

MS Decode

This button will activate MS Decoding for the stereo signal

Swap (Reverse) Left and Right Signals

This button will reverse the left and right signals or the Middle and Side signals if MS Decoding is active.

Input Balance

Controls the relative levels of left and right signals in the stereo pair.

NOTE: Most of the channel settings are preserved when switching from Mono to Stereo or vice versa. Pans are reset and stereo routing may not be correct if the relevant output sockets are unavailable

Phantom Power only appears if the channel's source signal is a microphone.

When you connect to a Microphone input, a Phantom Power switch appears in the Input Routing Module. Phantom Power operates at +48V. The default setting of this button can be controlled in the "Sockets File".

Channel Presets

The Channel Presets button allows you to store or recall a complete channel setup. A Channel Preset contains all the channel controls from the Input Gain to the Pan and Fader positions and group routing. Note that a channel preset does NOT include any input socket routing information - this must be set specifically for each channel.

When you press the Channel Preset button, the screen displays a Preset Selector:

To **Recall** an existing channel preset, simply touch the preset you want. If the preset is not visible, you can touch the vertical arrows to scroll the list up or down. The preset settings are implemented in the channel as soon as you touch it.

To store the current channel settings as a **New** preset, touch the **New** button, then type a name for the new preset.

To **Replace** an existing preset with the current settings, touch the **Store** button, then touch the name of the preset you want to overwrite.

To **Rename** an existing preset without changing its settings, touch the **Rename** button, then touch the preset you want to rename, and type the new name.

To **Delete** a preset, touch the **Delete** button, then touch the name of the preset you want to delete.

The **Default** button forces all controls on the channel to their default settings. This will normally mean flat EQ, inactive dynamics, central pan, Aux sends at zero, and fader at 0dB.

The **Close** button removes the Preset Selector from the screen, but has no direct effect on the channel settings.

Gain, Phase and Delay

When the Input module is expanded, the rotaries and switches in the Lower Row of input bank controls (immediately below the channel display) control the Delay settings for mono channels or Input Balance and Delay for stereo channels.

In addition, Gain and Phase adjustment is always available using the controls above the Inputs Screen.

The **Input Gain** control provides a basic level trim. If the input source is an analogue input socket, the Gain setting controls the analogue amplifier which sets the incoming signal level before conversion to digital. The **Phase** switch allows +/- phase settings.

On mono or stereo channels you can use the **Delay** control to delay the input signal by up to 240ms. On a mono channel, pressing the **Set 0** button sets the delay back to zero.

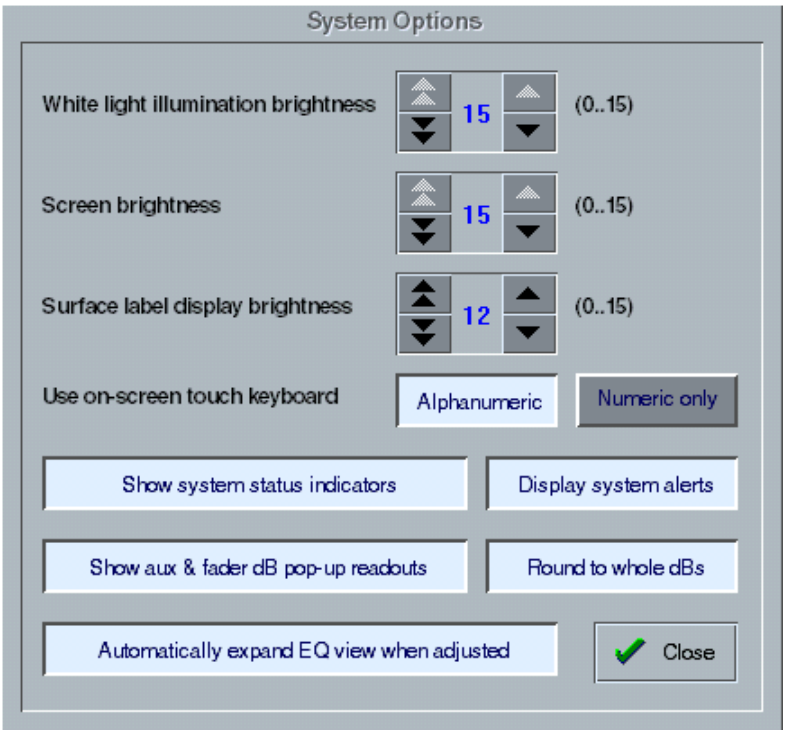
2.2.2 Equaliser Module .....

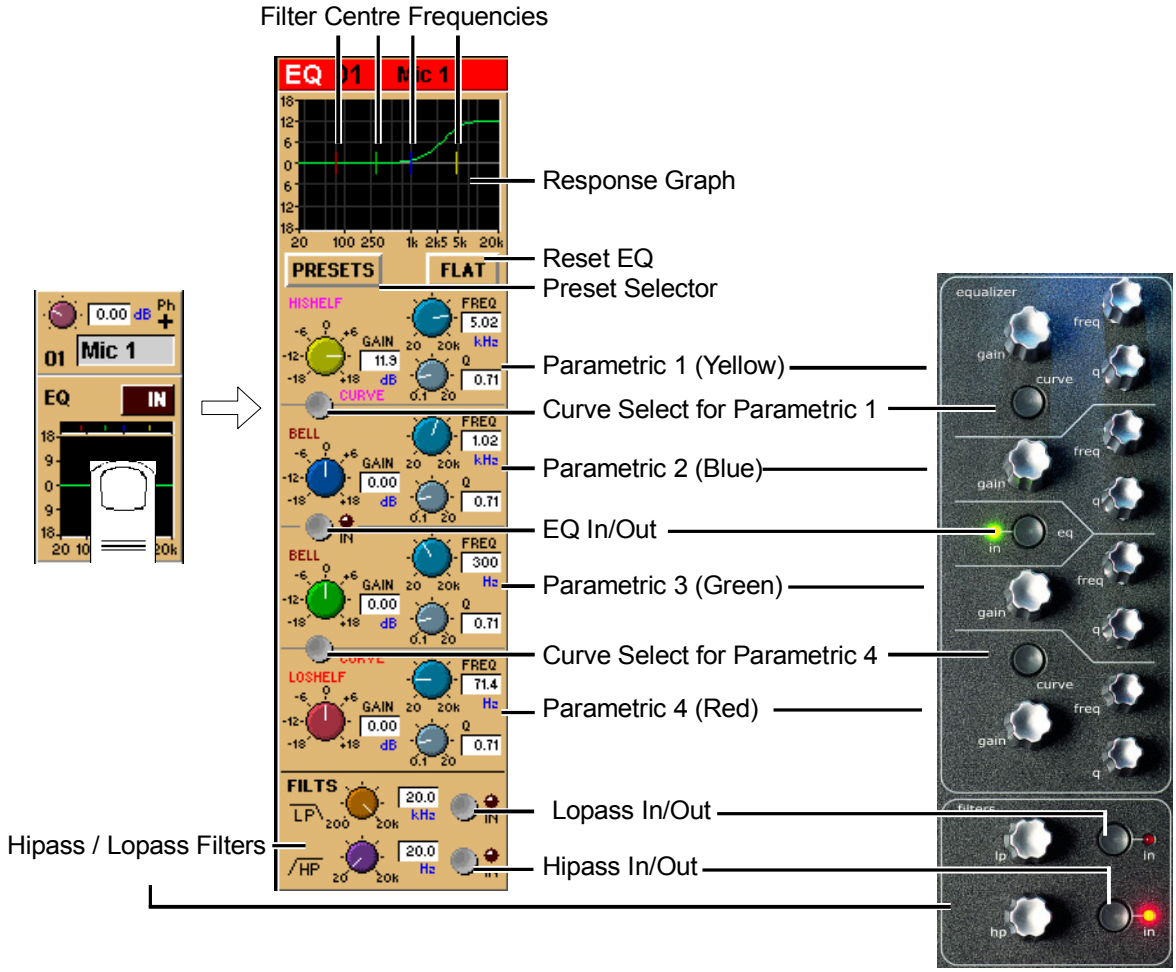
The EQ module comprises four user-configurable parametric filters.

There is also a pair of swept High-pass and Low-pass filters. If the EQ module is not expanded, the EQ can be switched On or Off with the In / Out button above the EQ graph

To expand the EQ Module for a channel, first select the channel, then touch the channel's EQ graph. To hide the module again, touch the expanded EQ graph.

Note: The EQ panel can be expanded automatically when an EQ control is adjusted by setting System Menu / System Options:





When expanded, the EQ Module shows the filter settings in detail, using a different colour for each filter. The In/Out switch and indicator for the EQ module is located in the centre. When the EQ module is visible, the EQ controls at the right side of the screen operate corresponding to the on-screen controls.

Preset Selector

Presets are used not only for complete channel setups, but also for EQ and Dynamics setups. They provide a way of storing the EQ settings for a particular channel, so that these settings can be recalled instantly at a later date, or for another channel.

Touching the EQ module's **Presets** button displays a Selector panel for the EQ presets. The panel works in exactly the same way as the Channel Preset Selector described earlier in this section (see 2.2.1), although an EQ preset only contains settings for the EQ controls, not for the whole channel.

Flat Button

The **Flat** button forces all controls on the channel's EQ section to their default settings.

Equalisers

Filters two and three (blue and green) are swept parametric "bell-curve" equalisers, with a centre-frequency range of 20Hz-20KHz. They provide up to 18dB Cut/Boost, with Q adjustable from 0.1 to 20.

Filters one and four (yellow and red) default to being a Hi and Low Shelf but each has an additional **Curve** switch which allows you to select HiShelf / Lowpass or Bell for filter one and LoShelf / Hipass or Bell for filter four. When the Hipass or Lowpass function is selected, the filter operates at 12dB/Octave, and the Q and Gain controls disappear.

Hipass / Lopass Filters

The Hipass and Lopass filters at the bottom of the module (purple and orange) operate at 12dB/Octave, and can be swept from 20Hz-20KHz (HPF) and 200Hz to 20KHz (LPF).

Note: The Hi and Lo Pass Filters are positioned preprocessing and therefore they will be unavailable to any internally generated signal such as the test noise.

These internally generated signals consist of:

1) Any signal in the **Misc** signal group (Talkback Mics, Test Tone and Noise).

2) Group or Aux Buss results (labelled with a ~ eg ~ Aux1 L)**.**

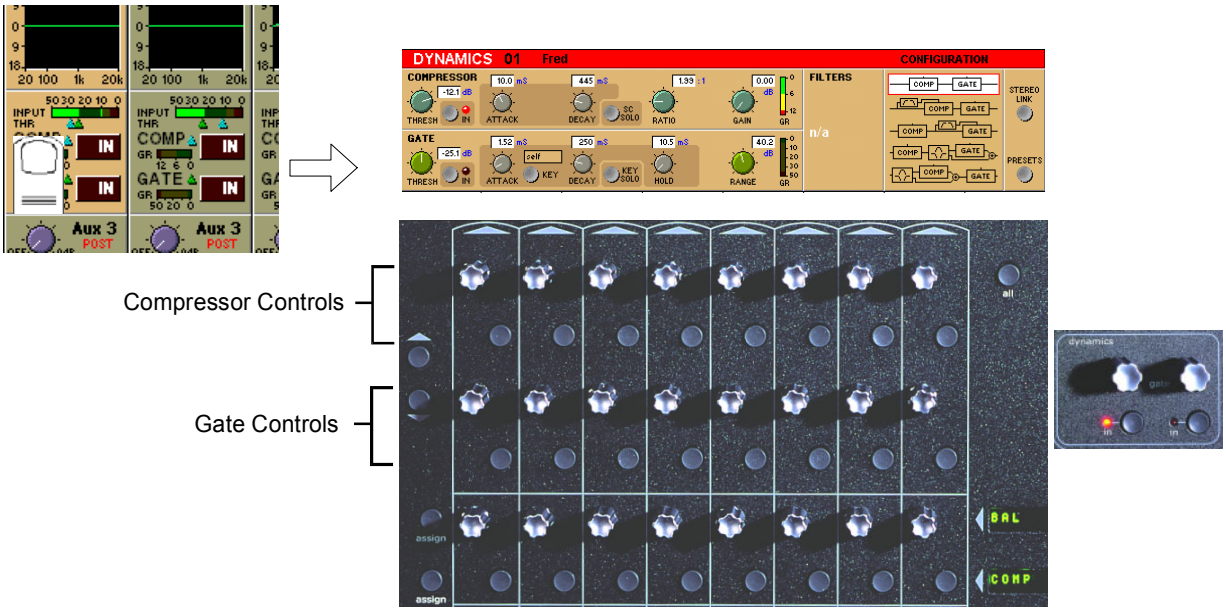
3) Internal FX Returns (any signal from the Effects input signal group which is used by the optional effects module)**.**

2.2.3 Dynamics Module

The Dynamics Module on each channel incorporates a Compressor and Gate, and also includes optional Filters for the sidechain and key signals.

You can display the Dynamics Module by touching the dynamics display on the channel strip. Touching the In / Out buttons will switch the section On or Off.

When expanded, the Dynamics Module appears across the bottom of the screen, and its settings are changed using the corresponding controls below the display.



Compressor

The **Threshold** is the level at which the compression begins to affect the signal. For example, if you set the Threshold to -12dB, this means that the compressor has no effect until the signal level exceeds -12dB.

The **Attack** time is the time taken for the attenuation to reach the desired level after an increase in the level of the input signal.

The **Decay** time is the time taken for the attenuation to reach the desired level after a decrease in the level of the input signal.

The **Ratio** control lets you set the ratio between the signal level change and the resulting attenuation change. For example, if you set the Ratio to 2:1, and the signal is above Threshold, a 6dB increase in level will result in a 3db increase in attenuation, so the net effect on the audio signal will be a level increase of 3dB.

The **Gain** control allows you to boost the overall level of the audio signal coming out of the compressor, to make up any level lost through compression.

The **Meter** provides a constant indication of the compressor gain reduction.

The **Sidechain Solo** places the Sidechain signal on the Solo buss in PFL (Mono) mode. This is achieved by holding down the corresponding button in the compressor controls below the screen.

Gate

The **Threshold** is the signal level above which the Gate has no effect.

The **Attack** time is the time the Gate takes to open once the signal level has risen above threshold.

The **Decay** time sets the time the Gate takes to close, once the signal level has dropped below the threshold (and the Hold time has passed - see next paragraph). A long decay time means that the attenuation increases gradually, making any sub-threshold signal fade out. A short decay time means that the Gate shuts quickly, cutting off the signal abruptly.

The **Hold** time is an extra period for which the Gate remains open after the signal level has dropped below threshold.

The **Range** control sets the maximum amount of signal attenuation implemented by the Gate when it is closed (*ie* when the signal level is below threshold). A Range setting of 0dB means that the Gate has no effect, while a Range setting of 30dB means that all signal levels below threshold will be attenuated by -30dB.

The **Meter** provides a constant indication of the Gate attenuation. If the Gate is fully open, the meter shows full deflection, indicating 0dB attenuation. If the Gate is fully closed and the Decay and Hold times have passed, the meter shows the amount of attenuation set by the Range control.

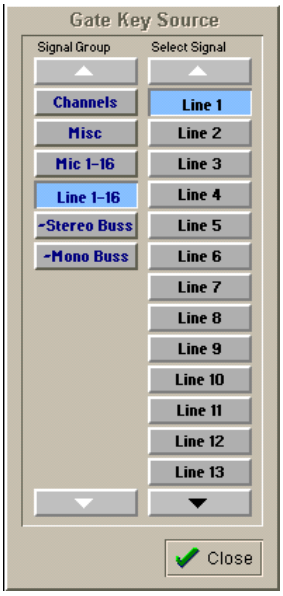
The **Gate Key** button allows you to select the signal used to trigger the Gate. The default setting is Self, where the level of the channel's own signal is used as the trigger, but you can use this switch choose a different channel or buss.

Pressing the Gate Key button in the Dynamics panel displays a routing panel from which to select a key source. All input signals and buss results are listed as well as input channel post-processed signals.

Note: The Signal Group labelled Channels contains the post-processed signals.

Gate Key signals use the channel send resource just like direct output and insert sends. This resource is limited to 96 channels and when all 96 are used up, other channels listed will be greyed out. The state of channel send resources is displayed on the diagnostics panel.

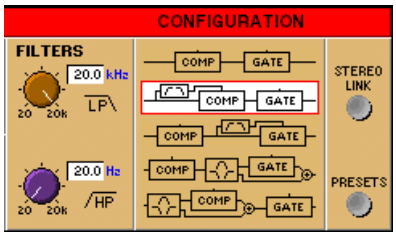
Note: When the Filters are switched into the Dynamics section the Gate Key Source is automatically switched to its "Self" setting and disabled.



The **Key Solo** places the Key Source signal on the Solo buss in PFL (Mono) mode. This is achieved by holding down the corresponding button in the gate controls below the screen.

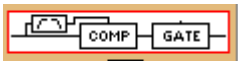
Configuration and Filters

The default structure for the Dynamics Module is a simple Compressor-Gate layout, but you can also select from four other structures, or orders of effect processing, and use filters to achieve frequency-sensitive keying of the dynamics. The filters are a pair of second-order (12dB/Octave) High-Pass and Low-Pass filters, which can be swept between 20Hz and 20KHz.

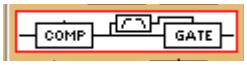


You can select any of the structures just by touching them on the screen, and all the structure options except the default top one use the Hipass and Lopass filters. The filter roll-off frequencies are controlled by the rotaries directly below the on-screen controls.

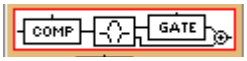
Note that the filters cannot be used on an external trigger source.



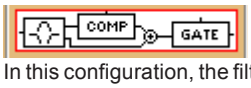
In this configuration, the filters are used in the side chain of the compressor to provide frequency conscious compression effects such as de-essing.



In this configuration, the filters are used in the side chain of the gate to provide frequency conscious gating.



In this configuration, the filtered signal feeds the input of the gate while other frequencies bypass the gate. This allows for a specific band of frequency to be gated and then mixed back into the remaining band.



In this configuration, the filtered signal feeds the input of the compressor while other frequencies bypass the compressor. This allows for a specific band of frequency to be compressed and then mixed back into the remaining band.

Dynamics Presets

Touching the Dynamics module's **Presets** button displays a Selector panel for the Dynamics presets. The panel works in exactly the same way as the Channel Preset Selector described earlier in this section (see Section 2.2.1), although a Dynamics preset only contains settings for the Dynamics controls, not for the whole channel.

Dynamics Linking

The Gate and Compressor modules may be linked in adjacent channels to produce a stereo mixed control voltage, ensuring both channels respond identically.

Press the **Stereo Link** switch on the right hand side of the Dynamics panel. Both sides of the pair are switched simultaneously.

Note: The switches are not included in snapshots or presets.

In a stereo channel, the stereo link switch is pressed by default.

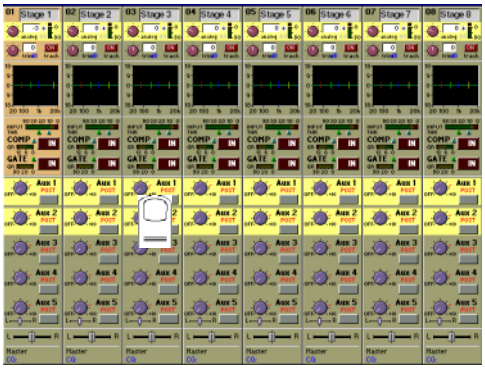
2.2.4 Pan / Aux Module .....

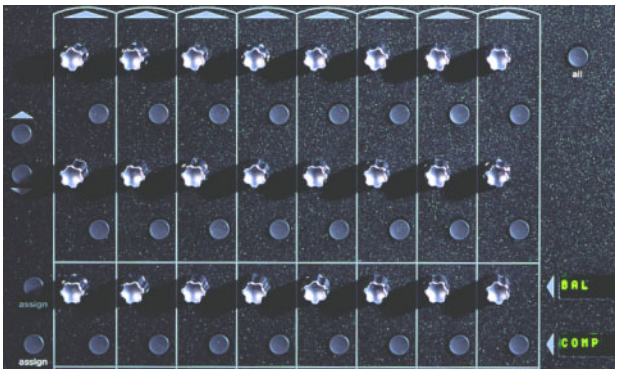
The Aux Send and Pan controls are always operated using the Lower Row of rotaries below each channel of the on-screen display. There are only two rotaries and switches for each channel, but these can be assigned to any Aux or Pan control using the **Screen Scroll** buttons at the left end or by touching the on-screen control that you wish to adjust. The current assignment of the controls is indicated by a highlight on the screen.

To expand the display to show more auxiliaries on screen touch the highlighted control.

To return to the standard view touch the highlighted control again.

Note: Holding the **All** button on the worksurface and touching the highlighted control will expand the view for all the channels in the relevant bank.





The Pan/Aux controls and scroll buttons operate in exactly the same way in both the Standard and the Expanded view.

Auxiliaries

The console can support up to 28 Mono or 18 Stereo Auxiliaries, depending on the availability of bussing resources. Auxiliaries can be mono or stereo, and stereo Auxiliaries have a Pan control as well as the normal Send Level control.

The Aux send rotaries below the screen operate differently depending on the Aux format. For mono Aux sends, each row of rotaries controls a different send level, but for a stereo Aux send, the two controls are used for send level and pan position for that Aux. As always, the assignment of the rotary controls below the screen is clearly indicated by the highlight on the relevant screen controls, and you can always use the Screen Scroll buttons to access the control you require.

Aux Pre / Post and On / Off Switching

Each Aux Send rotary control in the Lower Row has an associated switch, which operates both the Mode and On/Off function for that Aux.

If the level control is set to zero (as Aux 1 above), the switch controls the Mode setting for that Aux. As soon as the level control is moved above zero (Aux 2 above), the switch becomes an On/Off switch for that Aux send. So to change the Mode setting for an Aux, you must first reduce the level on that Aux Send to zero.

There are 3 possible Modes:

PRE M = Pre Mute and Pre Fader

PRE = Post Mute and Pre Fader

POST = Post Mute and Post Fader

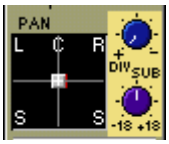
See Aux Buss Control in Chapter 3 for global mode changes.

Pan Control

Panning to the Master and Group busses is Stereo or Surround, depending on the console configuration. Pan position for each channel can be controlled in two ways: by using the rotary controls in the Lower Row below the on-screen channel display, or by Selecting the channel and using the Joystick. For surround panning, the Joystick is much more intuitive than using a pair of rotary controls.

Surround Panning

With Surround console formats, in addition to the surround Pan control, there are two additional controls for Divergence and Sub in 5.1 format and one control for Divergence in LCRS format.



When using the **Joystick** to Pan the Selected channel, you will find that the Joystick position is shown on the Pan control as a pair of green lines. Moving the Joystick moves these lines, but does not move the Pan position of the channel itself until the green lines travel over the real Left-Right or Front-Back pan position. Once the Joystick position has passed through the real Pan position, further movement of the Joystick will then alter the Pan position in the normal way.

When using the **rotaries** for surround panning, the upper rotary controls the Left-Right position, and the lower rotary controls Front-Back.

Preset Pan Positions

The upper button directly below the pan rotaries can be used to reset panning positions.

In a stereo console it will switch panning between left, centre and right positions with successive presses. In LCRS and 5.1 consoles the button works in a similar way for each available position.

Panning Stereo Channels

When an input channel is stereo and therefore controlling a pair of input signals the pan control will appear in one of the following ways.

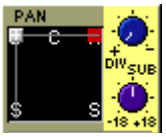
In a stereo console configuration the upper rotary serves as a width control with the full left position being mono, the centre position being normal stereo and the full right position being wide stereo. The width control is accessed by scrolling down past the pan. The lower rotary serves as a balance control between the relative levels of the stereo pair.

The surround panner for stereo inputs simultaneously controls the position of both left and right signals. The joystick and wheel directly control the position of the left signal, and the right signal is automatically mirrored on the left-right axis. A red indicator shows the position of the right signal. This provides some control of width. The signals can also be crossed to reverse the stereo image.

When panned to centre, left and right will be mono. Front-back, Sub and Divergence are always identical for both left and right signals.

Divergence and Sub

The Div and Sub controls can be adjusted using the normal Pan/Aux rotaries below the screen - use the Screen Scroll buttons to move the highlight **down** from the Pan control to highlight Div and Sub.



The **Divergence** control limits the width effect of the Pan control when sending to Surround busses.

A Divergence setting of zero (Full left) allows full LCR panning between left and right busses (Zero Divergence).

Setting the rotary full right will remove the signal from the centre buss and only allow the signal to feed the left and right busses (Negative Divergence).

The **Sub** control is only present on 5.1 console configurations. It is a trim control with unity gain at the centre position for sending the signal to the Sub channel of a surround buss or output.

Controlling the Sub Feed

When a Sub control is present the lower button directly below the pan rotaries switches between three different states for controlling the Sub Feed**.** Successive presses of the button will change to the following states:

LCRSS on - The signal can go to all busses except the sub buss according to the channel pan position. (Default mode)

Sub on - The signal can only go to the Sub Buss. (Indicated by a B in the display)

All on - The signal can go to all busses including the Sub Buss. (Indicated by LCRSS and B in the display)

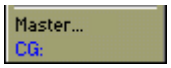
The current state is indicated by letters in the background of the pan control display.

NOTE: This control is contained in snapshots and channel presets. It is part of the **Panning Scope** for **Snapshots**.

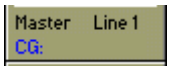
2.2.5 Routing Module .....

At the bottom of the input channel display is the Routing Module. This gives an abbreviated display of the current channel routing - on the left, the Master and Group routing, and on the right (if the channel is routed to a Direct Output) the name of the Direct Output socket. As the screen only has enough space to display one buss name, the routing of the channel to additional Groups is indicated by dots...

If the channel is a member of a Control Group, the name of that group also appears here.



Routed to Master and other group(s) - no direct routing

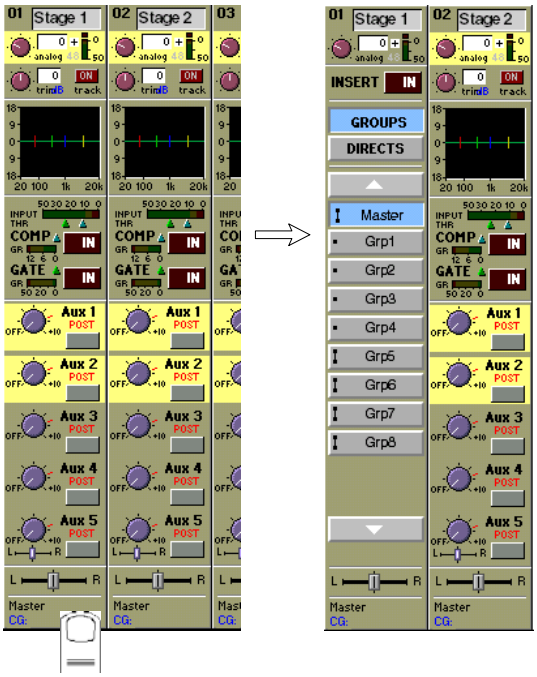


Routed to Master only and Direct routed to a socket called "Line 1"

Displaying the Routing Module

Touching the bottom of the channel displays the full Routing module, which controls the buss routing for the signal. To hide the Routing Module, touch the same area again.

The Routing Module allows you to select the console Group and/or Direct output socket routing for the channel.



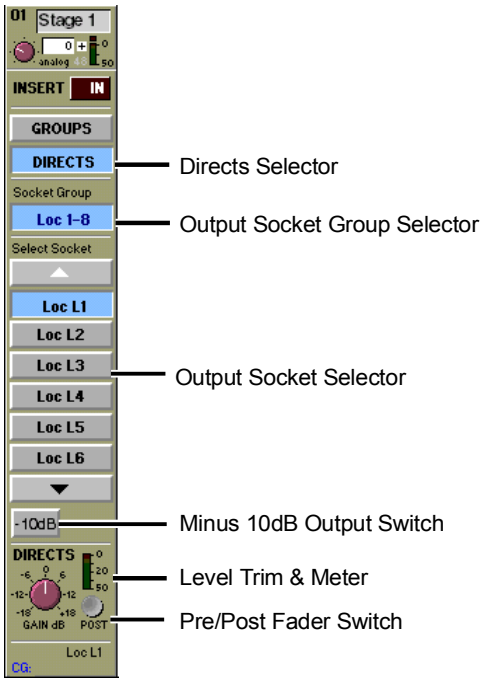
Group Routing

When the **Groups** button is selected, the on-screen group buttons allow you to connect the channel to any number of output group busses - mono groups are displayed with a single dot (groups 1-4 in the diagram below), while stereo or surround busses appear with a double dot (groups 5-8). To connect or disconnect the signal, simply press the on-screen button for the relevant group.

The number and type of groups depends on the console configuration.

Direct Outputs

You can also choose to route the channel signal directly to any of the console's output sockets, by touching the Directs button. This shows a display of the console's Output sockets, so that you can select any number of sockets for the Direct Out.



A Direct Output can operate in one of three modes:

PRE M = Pre Mute and Pre Fader

PRE = Post Mute and Pre Fader

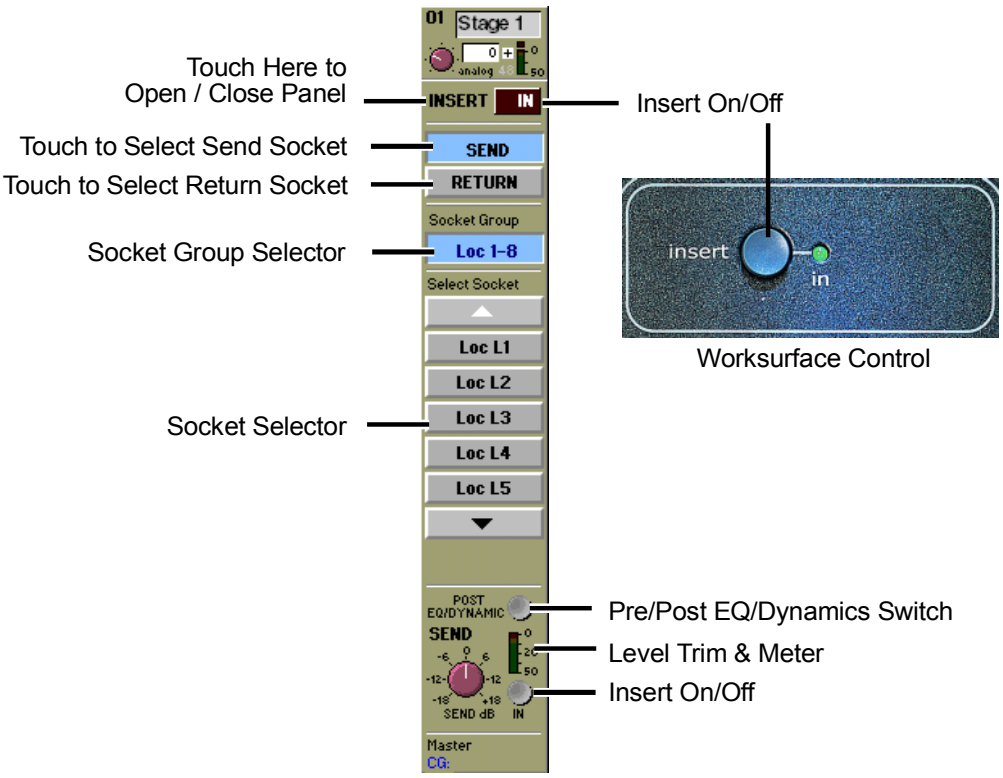
POST = Post Mute and Post Fader

Its level can be trimmed by +/-18dB and a -10dB pad can be applied.

Insert Routing and On/Off Switch

This button controls the routing for the input channel insert send and return selection.

Touching the word **Insert** displays a panel which allows you to select **Send** and **Return** sockets in the same way as you would select an Input socket or a Direct output. There is also a **Send Gain** control providing a trim of +/-18dB.



The Insert can be **PRE or POST EQ and Dynamics** switched by the button just above the Send Gain.

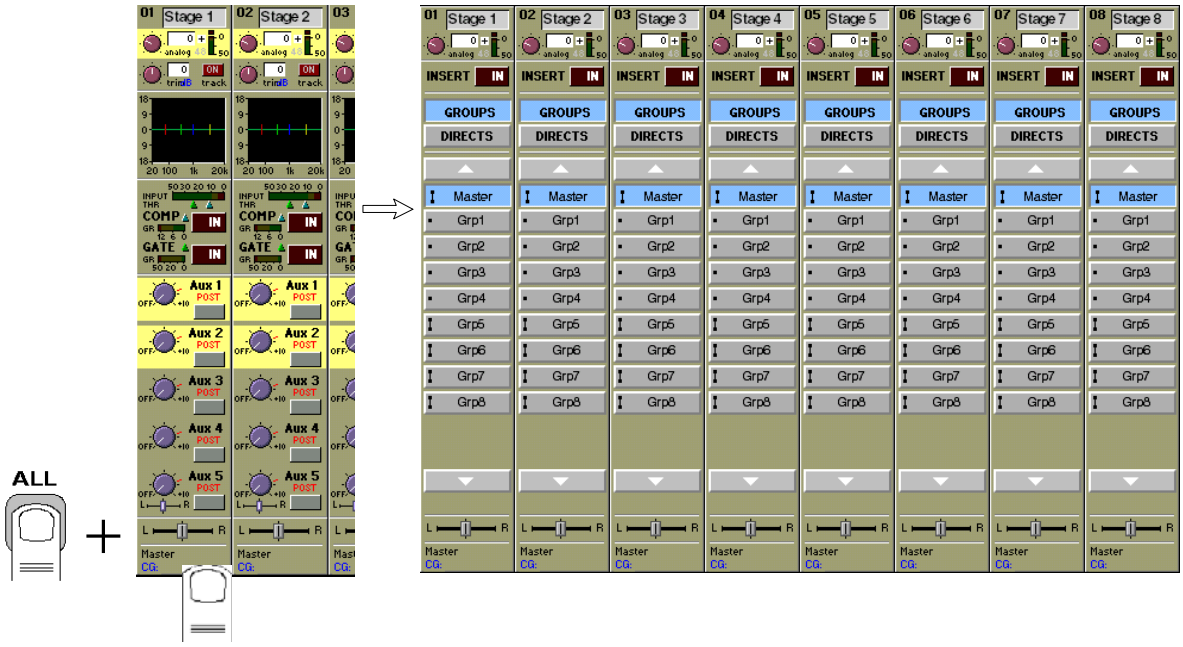
If you touch the **In** button, the channel's signal is taken from the Insert Return socket and thus switches the insert on.

The **In** button is also on the console worksurface on the top right hand side of the input screen.

Note: If the insert is switched on but a socket has not been assigned for the insert return then there will be no signal audible in the channel.

2.2.6 The ALL Button .....

The **All** button provides a quick way of displaying all the Input, Aux or Routing modules for a bank of eight channels. If you hold down the All button while touching the Input, Routing or Aux modules, the expanded view of the relevant module is displayed for all the visible channels.



You can also scroll through lists using the All button. For example, if you wanted to select several input sources from the same group, holding All and pressing the scroll arrow on one channel would scroll the adjacent channels as well.

In the Routing window holding the All button will also allow you to perform the following tasks:

1) Selecting Group or Direct routing for all the channels in the bank.

2) Scrolling Up and Down through lists.

3) Routing Input sources to consecutive channels without making them part of a gang.

4) Routing all channels in a bank to the same group by holding all and routing the first one.

5) Routing all the channels in a bank to consecutive direct outputs by holding all and routing the first one.

6) Routing all the channels in a bank to consecutive insert sends/returns by holding all and routing the first one.

NOTE: In examples 3, 4, 5 and 6 the functions are limited to consecutive channels in the same view mode.

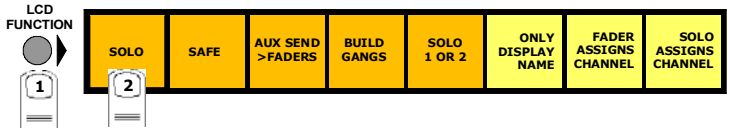
2.2.7 Undo / Redo Button .....

While a channel is assigned to the EQ/Dynamics/Joystick controls, the Undo/Redo LED comes on when a control is changed and pressing the button toggles between the new state and the state when assigned.

The controls affected by the undo function are input gain, phase and delay, all EQ and dynamics, all aux send levels, on/off buttons and pans, the insert and the main pan for the channel. It does not include any routing buttons.

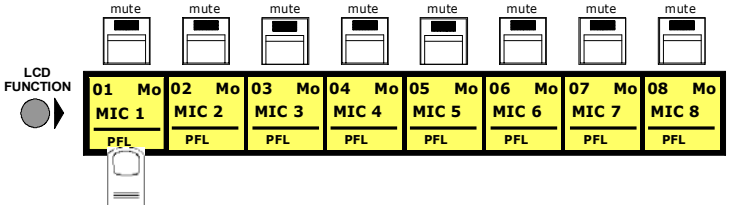
2.2.8 Channel LCD Function Buttons .....

Pressing the **Channel LCD Function** button on the left hand side of the Input Section allows you to select the function that the individual **Channel LCD Buttons** are currently assigned to.



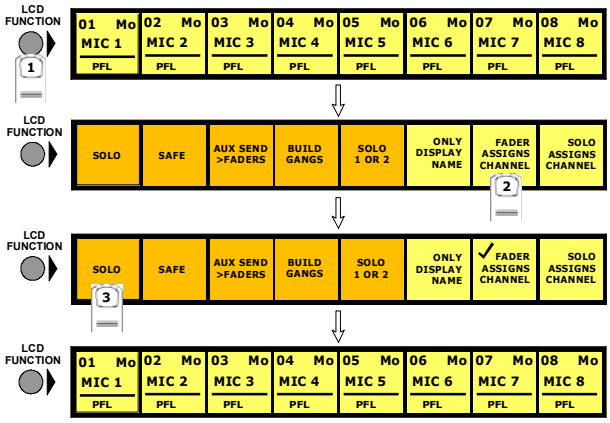
The default function is **Solo.**

To **Solo** a channel use the **Channel LCD Buttons** just below the mute buttons in the channel strip.

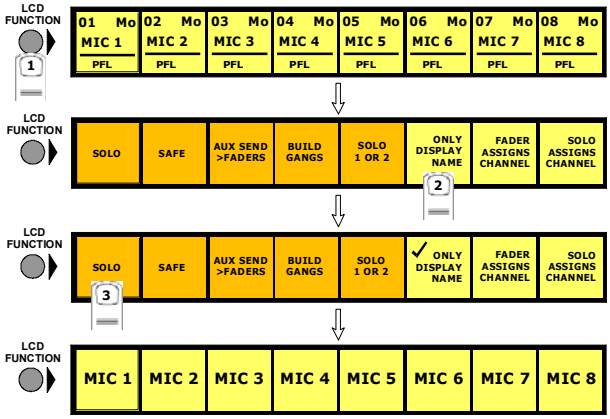


Note: The console has the option of two Solo busses - See Monitoring in Chapter 4 for more details.

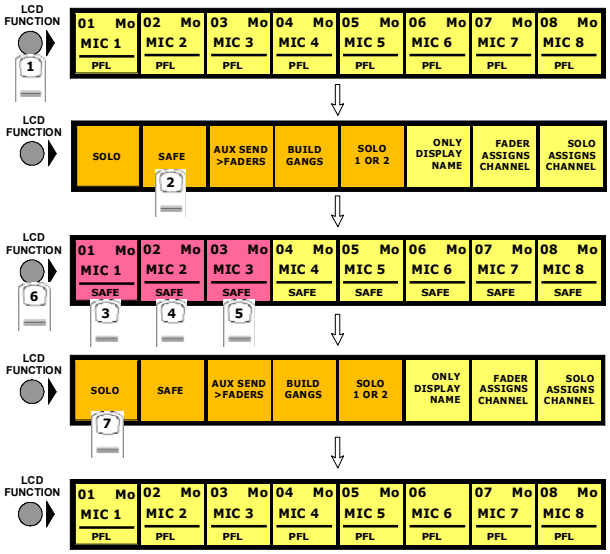
There is also an option to assign a channel by either touching its fader or pressing its solo button.
To activate either of these functions:
Press the **Channel LCD Function** button on the left of the input section and then press the **Fader Assigns Channel** and/or **Solo Assigns Channel** buttons. When the function is activated, the button appears with a tick in its display.
Press the **Solo** button again to return to the standard view.



The **Only Display Name** option changes the appearance of the Channel LCD buttons when they are in Solo Mode to show the Channel Name in a large easy to read font.
To activate this function:
Press the **Channel LCD Function** button on the left of the input section and then press the **Only Display Name** button. When the function is activated, the button appears with a tick in its display.
Press the **Solo** button again to return to the standard view.



The **Safe** function makes selected channels safe from all Snapshots.
1) Press the **Channel LCD Function** button
2) Press the **Safe** button.
3) Press the **Channel LCD** buttons for the channels that should be Safe (The buttons and screen channel strip will turn red).
4) Press the **Channel LCD Function** button to exit Safe mode.
5) Press the **Solo** function button to return to the standard view.



The **Aux Send > Faders** function allows you to control the Aux Send levels for a selected channel with the **Upper and Lower Master Faders**.

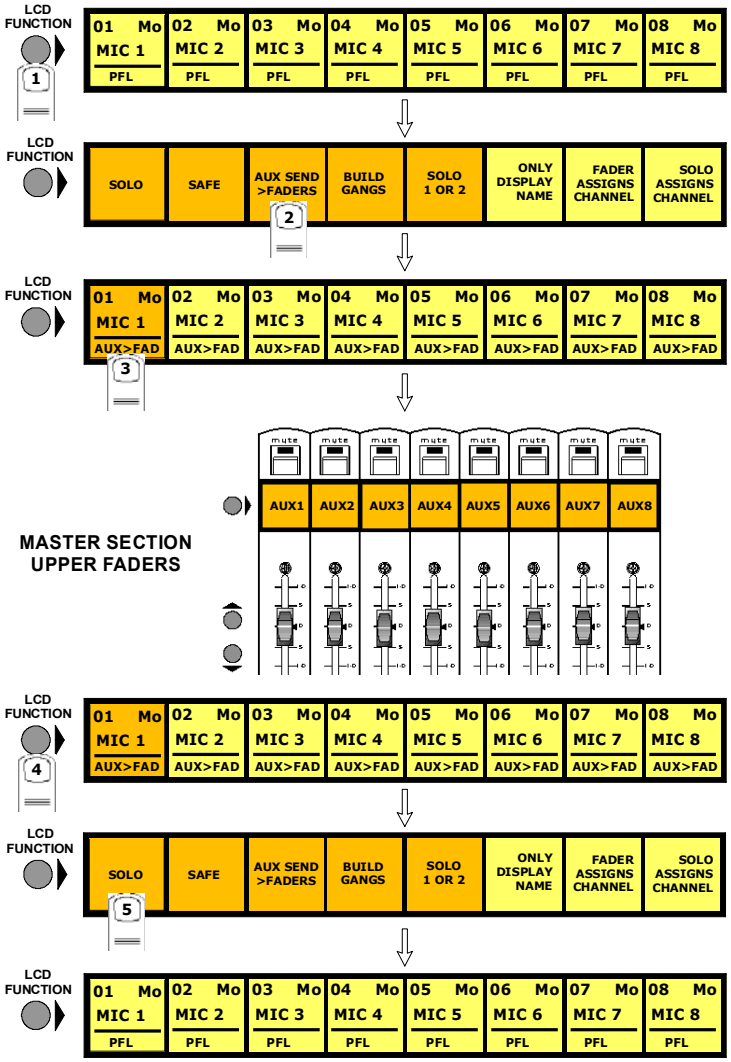
1) Press the **Channel LCD Function** button

2) Press the **Aux Send > Faders** button.

3) Press the **Channel LCD** buttons for the channel that you wish to control.

4) Press the **Channel LCD Function** button to exit Aux Send > Faders mode.

5) Press the **Solo** function button to return to the standard view.



2.3 Ganging

Ganging is the linking of input channel controls which will allow most types of adjustment made to one channel within the gang to be automatically made to all of the other members.

For example, if 2 channels are ganged and a fader movement is made on one of them, the other will be adjusted in the same way. Ganging can apply to any number of channels within one Input Bank.

2.3.1 Creating a Gang .....

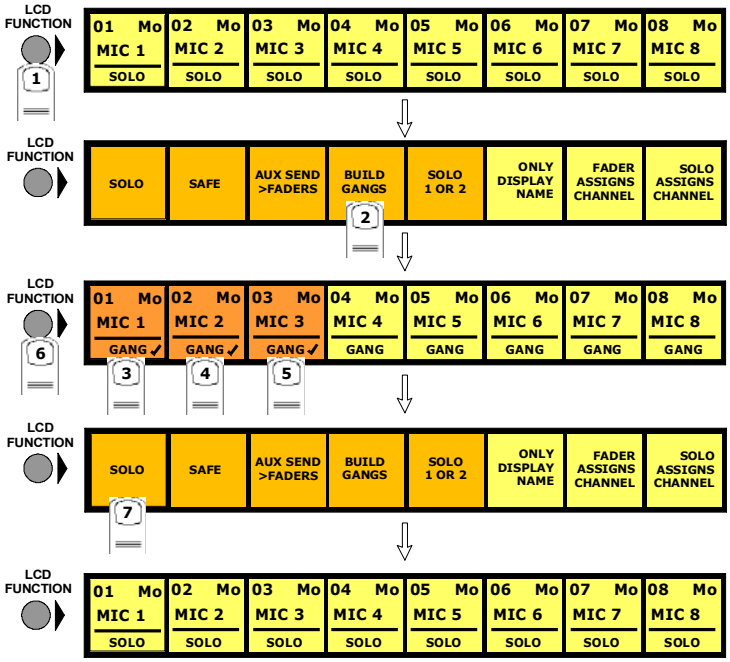
1) Press the **Channel LCD Function** button on the left of the Input Bank.

2) Press the **Build Gangs** button.

3) Press the **LCD Buttons** for the channels that you wish to gang (They will change colour).

4) Press the **Channel LCD Function** button again to exit ganging mode.

5) Press the **Solo** button to return to the standard view.



To create another new gang you should repeat the process.

When a channel is a member of a gang, a coloured line will appear at the bottom of that channel's screen display. Adjacent gangs are assigned different colours. Ganging is also indicated by triangular symbols on the LCD buttons.

NOTE: Members of the gang do not have to be in adjacent channels, they can be anywhere within the 8 channels in an input bank.

2.3.2 Clearing or Editing a Gang .....

A gang can be cleared or edited at any time by entering the **Build Gangs** mode as described in section 2.3.1.

To **remove a member** of the gang press the relevant highlighted LCD Buttons and they will return to their original colour and no longer be members of the gang.

To **clear** the gang remove all the members in the same way.

2.3.3 How a Gang Works .....

When channels are added to a gang their present settings are retained until an adjustment is made to any of the members controls. When this happens all members of the gang will be adjusted in the same way as the first but relative to their own starting position.

For example, if the channel fader of one member of a gang is at minus 6dB and another is at 0dB, when the first fader is raised to 0dB, the second will be automatically raised to plus 6dB.

ie. Both faders will be raised by 6dB from their previous position.

A similar situation exists with the other channel controls such as EQ and Auxiliary sends but when any of the gang members' controls reaches its maximum or minimum level the relative offset relationship is lost.

Only the channel faders can retain their relative offsets after they have reached a maximum or minimum level.

Adjusting settings for one member of a gang

If you wish to adjust the settings for one member of a gang without affecting the others, a member of a gang can be temporarily isolated from the rest of its gang by holding the channel's solo button down while adjustments are being made. When solo is released the channel will continue to behave as a normal gang member.

Which controls are affected by ganging?

Screen display changes such as showing the input or group routing modules can be different between gang members but the functions themselves are always linked.

For example, if 4 channels were members of a gang and a different input source was selected for one of them, the other three input sources would automatically be assigned to the next consecutive sockets in that input group. This assumes that there are enough input sources for all the gang members in the socket group. If there are not enough sources, the gang will be allocated as many as are available at that time.

In a similar way, if one gang members group routing is changed, the other gang members will all be routed to the same group.

NOTE: The following controls are not affected by changes to other gang members:

Channel and Aux Pans

Sub Feed Modes

Input Phase buttons

Solos

All other controls are affected by changes to other gang members including;

1) Presets

If a preset is selected for one gang member it will load into all the other gang members as well.

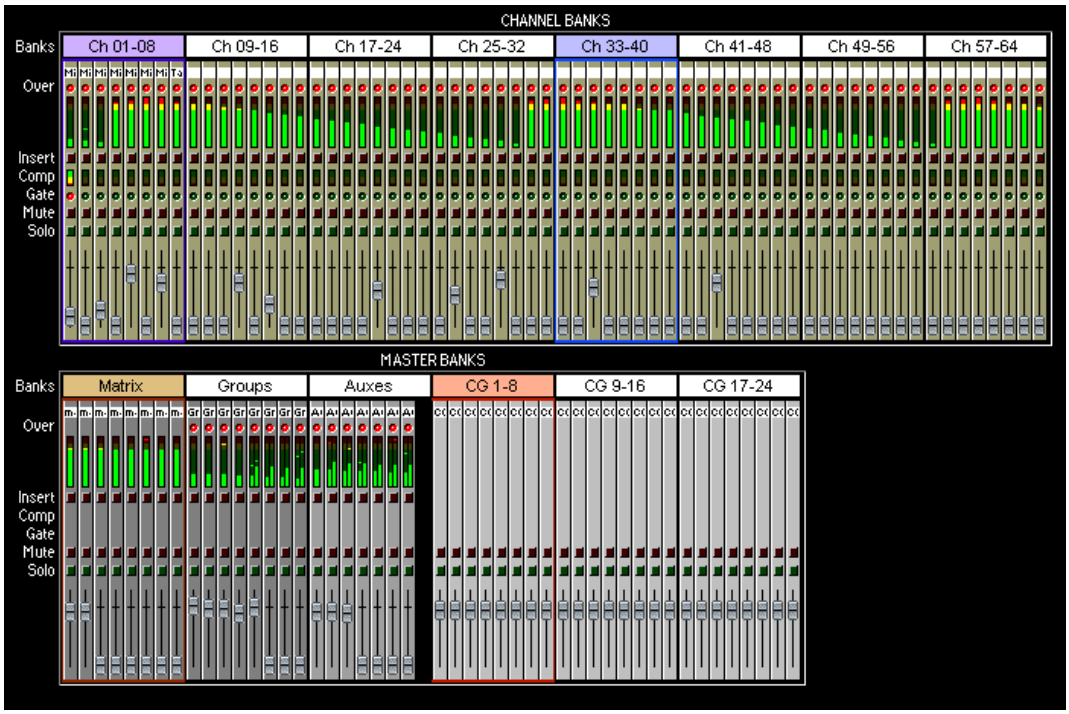
2) Socket Routing Buttons ie. Input source, Direct Out and Insert Send / Return.

2.4 Layout

2.4.1 External Screens .....

Each of the console's worksurface screens have an equivalent SVGA video output on the back of the console and therefore any of the input screens can be duplicated to an external colour monitor. Input screens are 640 x 480 resolution

There is also an output for an **Overview** screen and this can be customised to show different combinations of the console's controls using the functions in the Layout menu. It is recommended to use a 1280 x 1024 resolution for greatest flexibility. The monitor should be Plug N Play compatible.

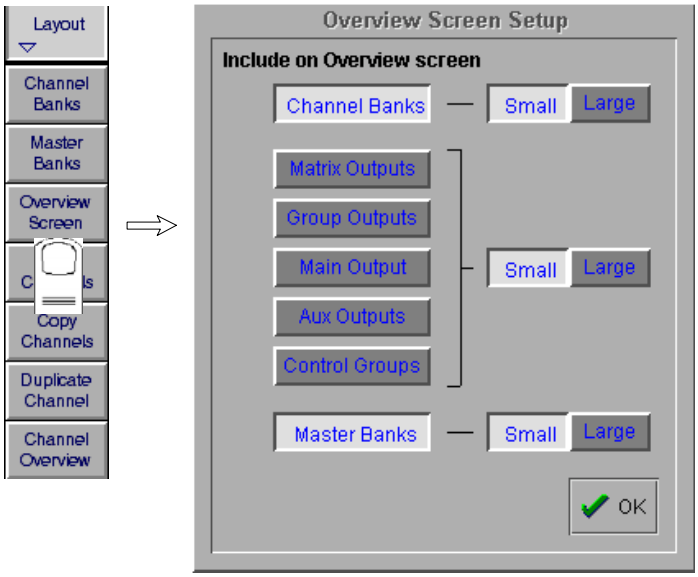


Each channel displays the essential meters, switches and fader, which may be operated with the trackball if required.

Coloured rectangles surround the channels which are currently assigned to the worksurface: magenta for the Input Banks and red for the Master Banks.

2.4.2 Overview Setup .....

To change the appearance of the Overview screen touch the **Layout** button on the Master Screen and touch the **Overview Setup** button.



This panel allows you to select which banks appear on the screen and whether they are **Large** or **Small** format. The default view shows **Channel Banks** and **Master Banks** in small format.

To show your choice of Output Banks, touch the relevant buttons in the left hand column and then touch the related Small or Large buttons on the right.

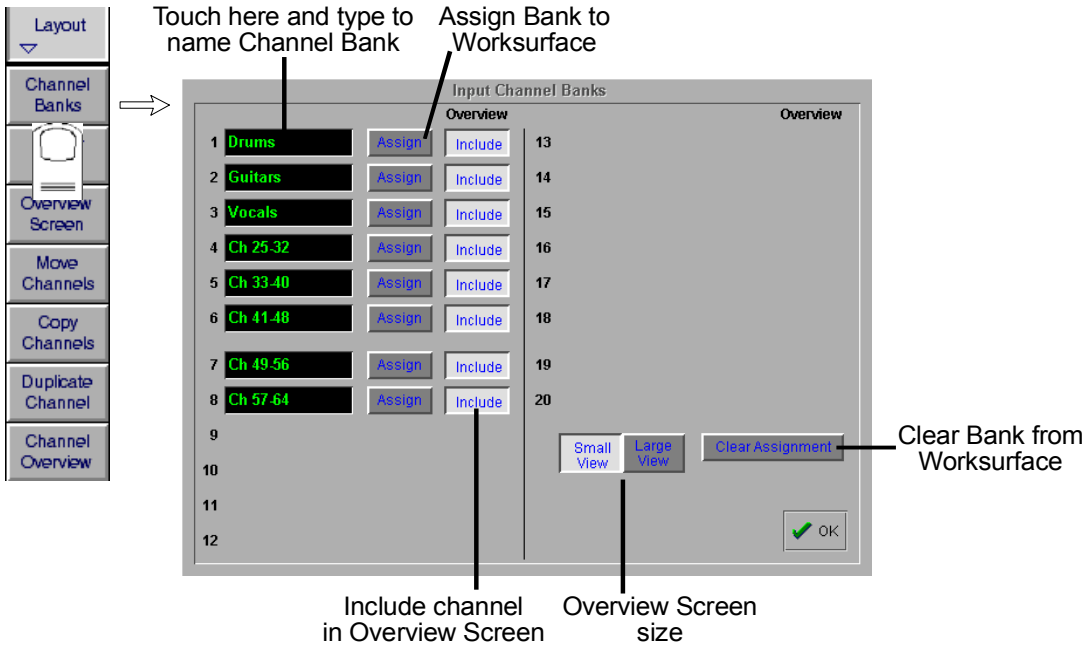
2.4.3 Channel Banks .....

The naming and assignment of the worksurface Fader Banks is controlled from the Channel Banks panel in the Layout menu on the Master Screen.

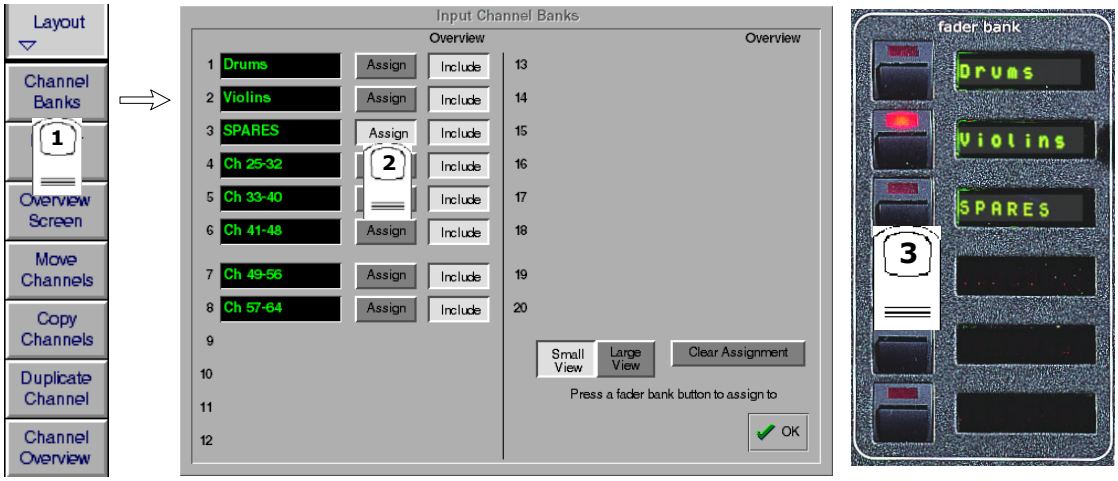
To **Name** a Channel Bank, touch the existing name eg Ch 1-8 and type a new one.

To include the Channel Bank on the **Overview Screen** touch the **Include** button next to the relevant Bank name.

To change the appearance of the Channel Banks on the Overview Screen touch the **Small** or **Large View** buttons at the bottom of the panel.



To Clear a Channel Bank from a worksurface Fader Bank:
1) Touch the **Clear Assignment** button.
2) Press the **Fader Bank** button that you wish to clear.
To assign a Channel bank to one of the console worksurface Fader Banks:
1) Touch the **Channel Bank Assign** button
2) Press the relevant **Fader Bank** button.



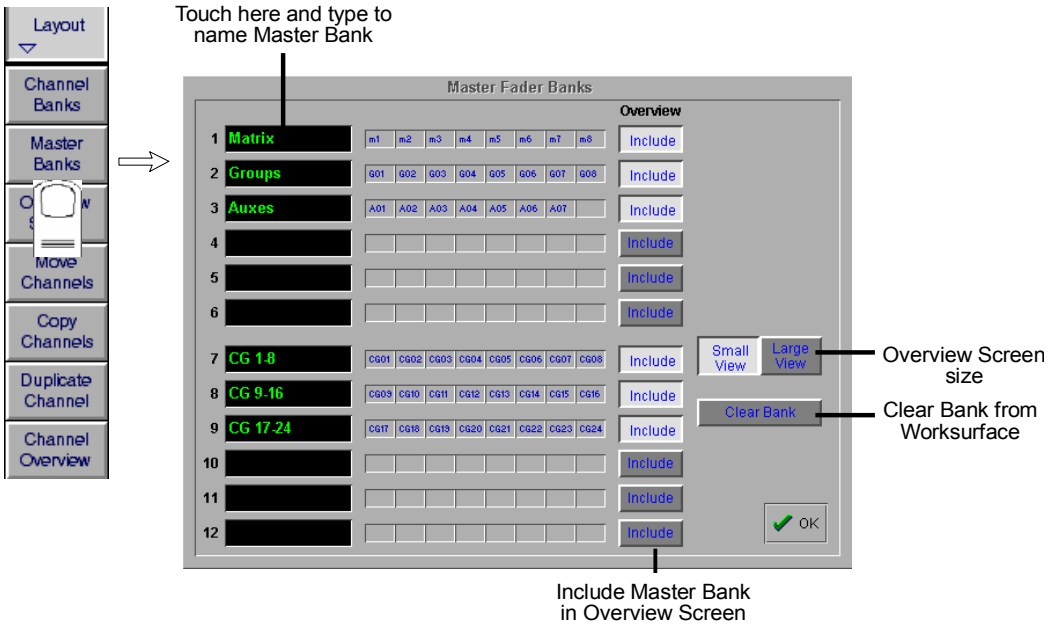
2.4.4 Master Banks .....

The naming and assignment of the worksurface Master Fader Banks is controlled from the Master Fader Banks panel in the Layout menu on the Master Screen.

To **Name** a Master Fader Bank, touch the existing name eg CG 1-8 and type a new one.

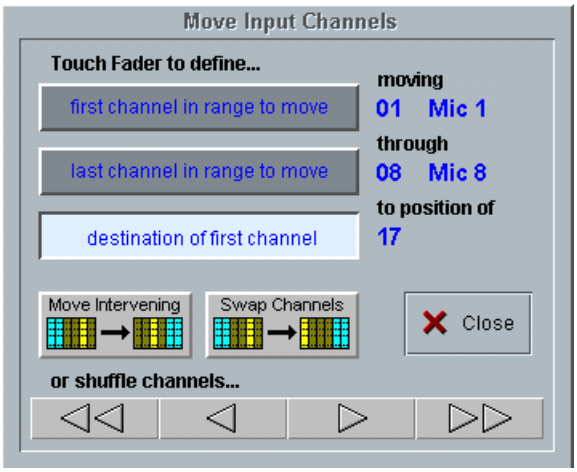
To include the Master Fader Bank on the **Overview Screen** touch the **Include** button next to the relevant Bank name.

To change the appearance of the Master Fader Banks on the Overview Screen touch the **Small** or **Large View** buttons at the bottom of the panel.



2.4.5 Move Channels .....

Touching the **Move Channels** button in the **Layout** menu opens the Move Input Channels panel which allows a single channel or a range of channels to be moved.



Touching a single channel allows it to be shuffled left or right with the arrows at the bottom of the panel. Both halves of a stereo linked pair are automatically selected together. Shuffling will automatically skip past stereo-linked pairs when moving the selected channels to their new positions.

Touching two channels or a gang defines a range to be moved. The shuffle arrows now operate on this range of channels, and the double arrows move by the number of channels in the range.

Touching a third channel defines the left of the destination range and enables the **Move Intervening** and **Swap Channels** buttons. A move or a swap cannot take place if a stereo pair would be split as a result; a warning message is displayed instead.

Move Intervening means move the source range to the destination position and shuffle all channels between the source and the destination (including all channels in the destination range) to fill the gap left by the source range.

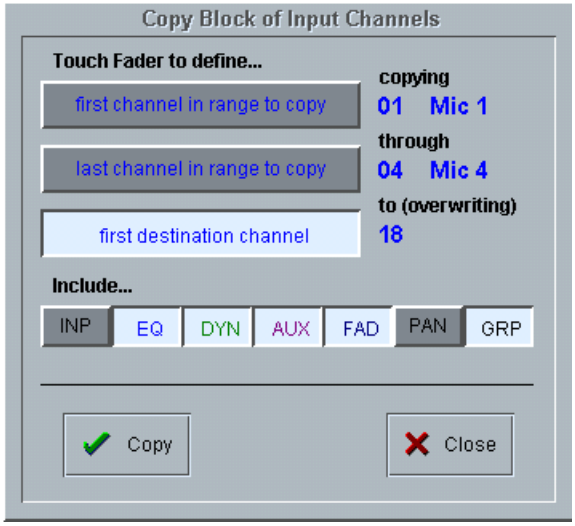
Swap Channels swaps the source and destination ranges leaving intervening channels alone. Move and Swap have the same effect if the source and destination ranges overlap.

After a Move or a Swap the selections are cleared but the panel remains visible tor a new selection. The shuffle buttons do not clear any selections and remain enabled as long as at least one source channel is selected.

Single channels may be moved or swapped simply by touching the source channel twice when the top selection button is pressed. Any of the three selections can be changed by pressing the relevant button and touching a fader.

2.4.6 Copy Channels .....

Touching the **Copy Channels** button in the **Layout** menu opens the Copy Input Channels panel which allows different elements of channel settings to be copied.



Touch faders to define the start and end of the range to be copied and then touch a third fader to define the destination for the left hand side of the group. The selected group will be highlighted in yellow in the input screen.

The destination channels will be overwritten and their previous settings will be deleted

Scope

Which controller values are copied depends on the scope buttons beneath the word **Include.**

INP = all input routing controls, including gain and signal source

EQ = all EQ controls, plus HP and LP filters

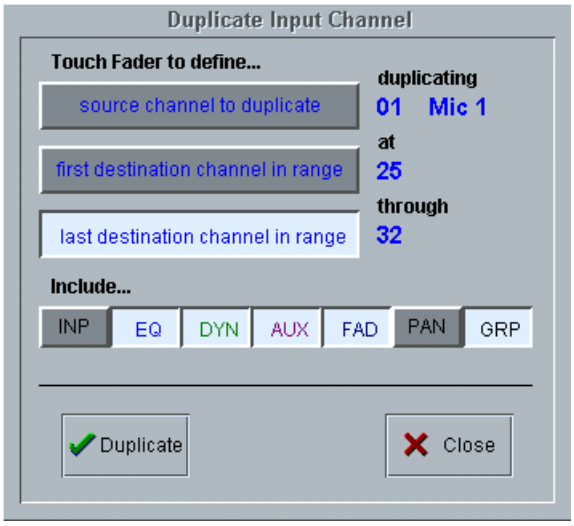
DYN = all Gate and Compressor controls plus gate key route, and HP / LP filters in dynamics

AUX = all aux send controls

FAD=channel fader positions
PAN = L/R and F/B pan or balance, Sub and Divergence levels and switches
GRP = Group routing buttons only
Channel mutes and control group membership are always included.
Direct Outputs and Insert Sends can only be fed from one channel at a time and therefore their routing is not copied. Stereo channels will be copied as long as sufficient audio processing (unrouted channels) is available, otherwise they will appear as mono.

2.4.7 Duplicate Channel .....

Where Copy Channels only duplicates each of a block of channels once, the Duplicate Channel panel allows a single source channel to be copied into several destination channels, duplicating the source several times.



Touch a fader to define which channel will be duplicated and then touch two more channels to define the destination range. The source channel will be duplicated into each channel in the destination range.
Scope is applied in the same way as with Copy Channels (See previous section).

2.4.8 Channel Overview .....

The **Channel Overview** panel in the **Layout** menu provides similar functions to the **Channel Banks** panel and a graphic representation of all the consoles input channels. Many controls can be adjusted on screen using the mouse/trackball controls.

The coloured outlines represent the banks that are currently being viewed on the worksurface and this view can be changed by touching the on screen banks. The Fader Banks can be named by touching their label and typing.

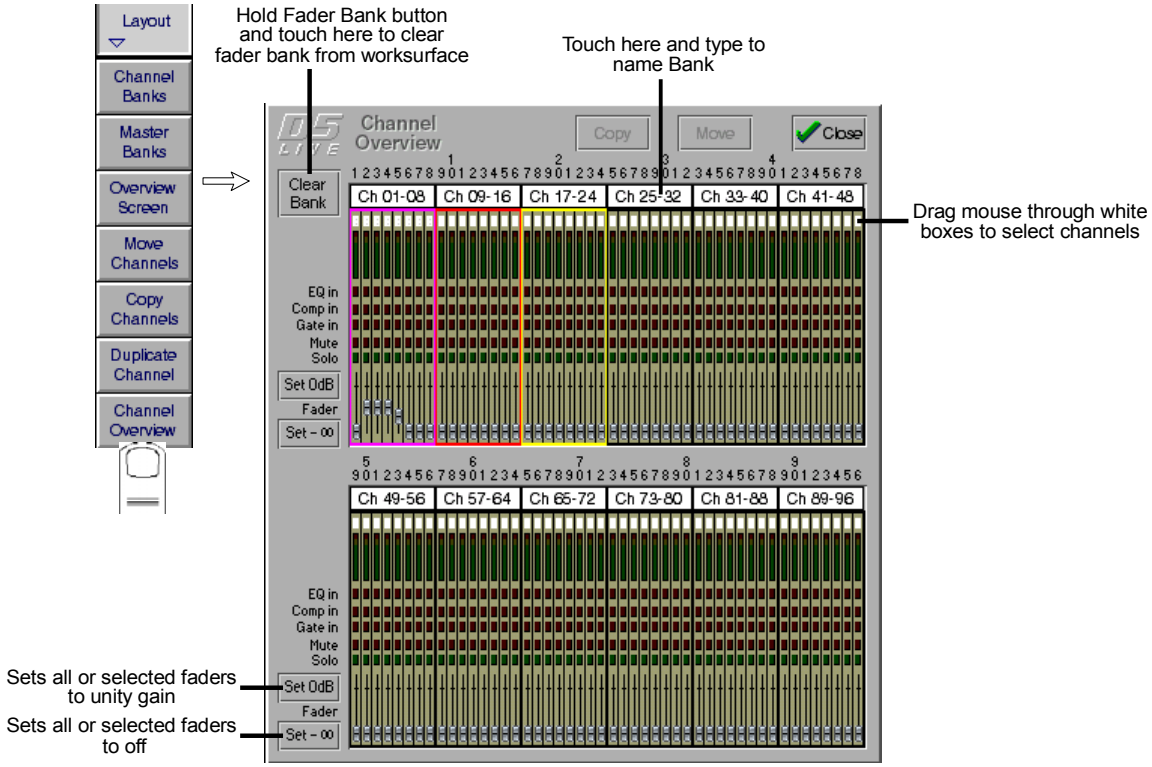
To **clear a bank** from the worksurface, hold down the relevant bank button on the worksurface and touch the on screen **Clear Bank** button.

To **assign a bank** to the worksurface, hold down the relevant bank button on the worksurface and touch the on screen bank that you wish to assign.

The **Set 0dB** and **Set - oo** buttons may be used to reset all or selected fader levels for the top and/or bottom row of channel faders.

To **Select Channels**, drag the mouse through the white boxes beneath the bank labels and release - the selected channels will be highlighted in yellow.

If channels are selected, then the **Copy** and **Move** functions become available and pressing either of these buttons will open the relevant panel with the source channels already selected.



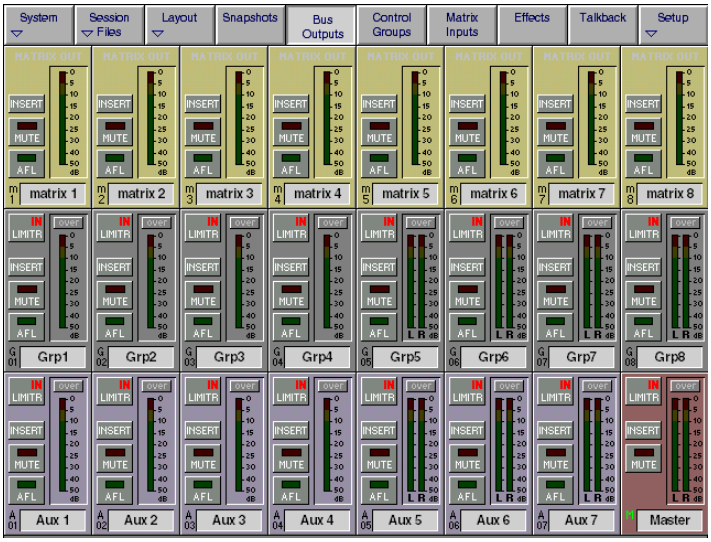
Chapter 3
Busses and Outputs

3.1 Busses and Outputs

3.1.1 Buss Outputs Display .....

The Master, Group, Aux and Matrix busses are displayed on the **Master Screen**, and the buss levels are controlled by the fader banks below the screen:

The exact appearance of the screen depends on the console's current buss configuration, but the layout will look something like this:



Scrolling the Master Screen

If the console configuration is using more than the 24 outputs which the screen can display, you can "scroll" the screen down the rows of busses using the **Master Screen Scroll** on the left hand side of the section

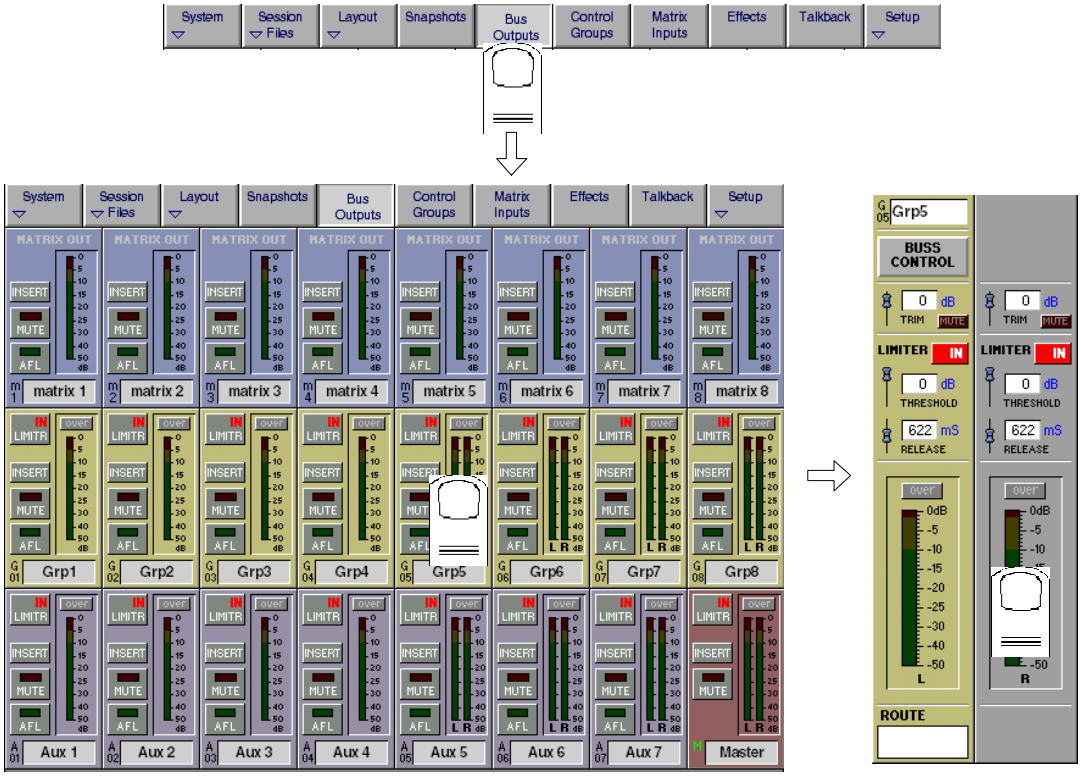
On Screen Buss Output Controls

Each buss has **Mute**, **Solo, Insert On/Off** and **Limiter In/Out** buttons and the screen also displays an **Over** light for each buss - these are described in the next section.

3.1.2 Expanding the Buss Output View .....

In the default state shown on the previous page, the level for each buss is controlled by a single fader, whether the buss is mono, stereo or surround.

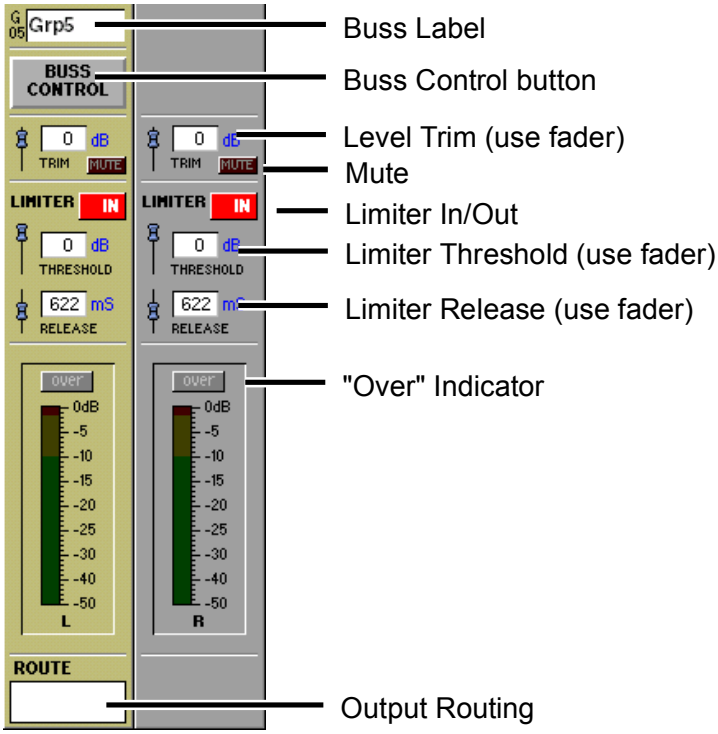
To see an expanded view of an assigned buss and access additional controls, touch the buss meter display.



Touching the expanded view of the buss meter will restore the display back to the single-fader mode.

3.2 Output and Buss Controls

Once an output channel is expanded, you can access its controls.



The Label, Buss Control and Routing settings apply to the whole buss, but for Stereo and Surround busses the other controls can be set independently for each signal on the buss.

3.2.1 Label .....

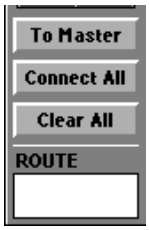
The **Label** operates in the same way as an Input Channel label - to change it, just touch the on-screen label, then type a new name on the computer keyboard or the On Screen Touch Keyboard.

When a buss is labelled its name will appear in the input channel routing display.

3.2.2 Buss Control Button .....

Touching the **Buss Control** button displays a screen showing which channels are currently routed to the buss and offers different options according to the type of buss it is.

Group Buss Control



Connect All routes all input channels to the buss.

Any fader which is being touched will be omitted from the connection process to facilitate the set up of a mix-minus feed.

Clear All clears the routing of all input channels from the buss.

Any fader which is being touched will be omitted from the clearing process and remain connected to the buss.

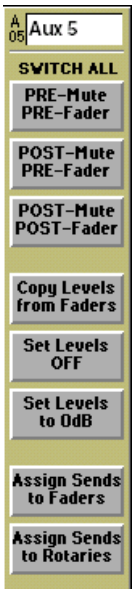
To Master allows the group to be routed onto the Master Buss. Only groups whose width is the same as the Master Buss can be routed in this way (ie. stereo groups on a stereo console; surround stems only in surround modes).

When a buss is routed to the Master Mix, audio processing resources are taken from the highest numbered available input channels. If insufficient channels are available a message is displayed quoting the number required.

If any of the input channels routed to the group are also routed to the Master Mix, a warning is displayed.

Note: The To Master button is not included in snapshots.

Auxiliary Buss Control



Switch All Pre-Mute/Pre-Fader makes the auxiliary sends for this particular buss pre-mute and pre-fader on all channels.

Switch All Post-Mute/Pre-Fader makes the auxiliary sends for this particular buss post-mute and pre-fader on all channels.

Switch All Post-Mute/Post-Fader makes the auxiliary sends for this particular buss post-mute and post-fader on all channels.

Copy Levels from Faders makes the auxiliary send levels for this particular buss the same as the fader levels on each different channel.

Set Levels OFF turns off all the auxiliary sends for this particular buss on all channels.

Set Levels to 0dB makes the auxiliary send levels for this particular buss 0dB on all channels.

Assign Sends To Faders transfers auxiliary send control to the channel faders for the relevant auxiliary.

Assign Sends To Rotaries scrolls the input channel view to the relevant auxiliary and allows immediate rotary control of the send.

Note: To activate Assign Sends to Faders/Rotaries using Solo Press see Section 4.5 - Master LCD Function Buttons.

3.2.3 Level Trim .....

This trims the level for each buss signal. For Stereo or Surround busses, you can trim the level of each signal independently using the fader below the display. The faders can also be assigned to the Limiter controls (see below) - touch the Level Trim display to assign the fader to the Level control.

3.2.4 Limiter .....

The **Limiter** is a feed-forward system which provides absolute signal limiting. You can operate the on-screen In/Out switch by touching it or by using the LCD button.

As with the Level, the **Limiter Threshold** and **Release** time are set using the fader below the display. To adjust *eg* the Threshold setting, touch the on-screen display of the Threshold - this will make the on-screen Threshold slider control turn red, indicating that this control is now assigned to the physical fader below the screen.

The **Over** indicator lights up whenever the Limiter is activated, or if the Limiter is switched out, whenever the buss signal level goes over 0dB. Once lit, the Over light stays on until it is touched.

3.2.5 Mute .....

Touching the **Mute** button on the screen or the worksurface cuts the output signal from the relevant buss.

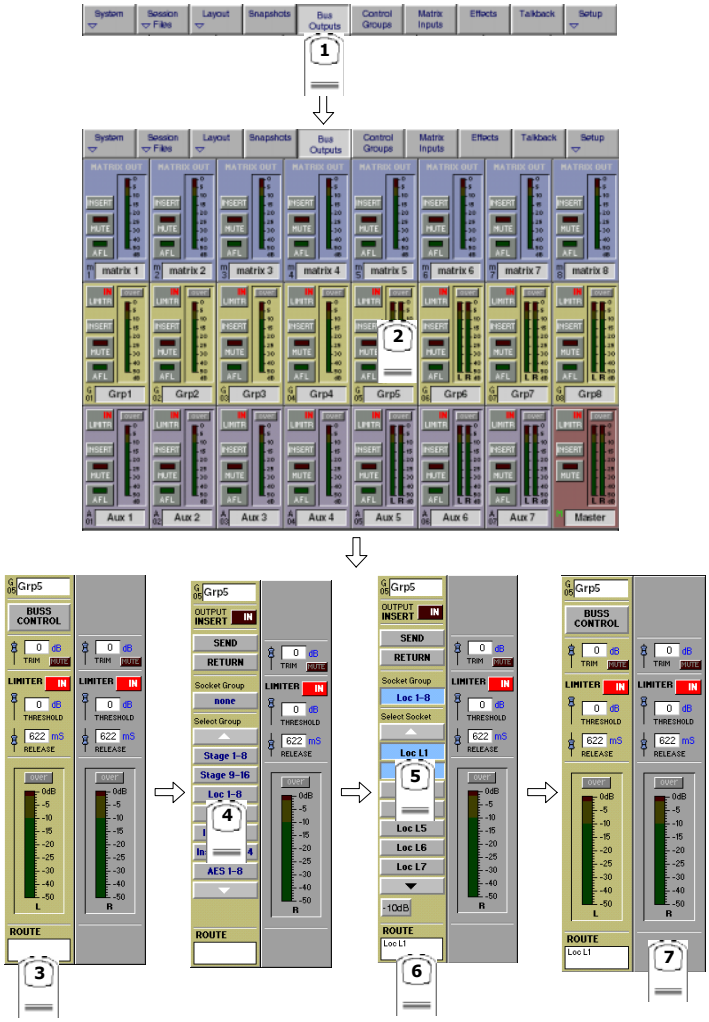
3.2.6 Meters .....

The **Meters** display the signal level, and indicate a peak level.

3.2.7 Output Channel Routing .....

The Buss Routing section indicates which output sockets the channel is currently connected to. To alter this routing, touch the Routing section: you can then select a socket (or a number of sockets) to which the buss signal(s) are routed.

NOTE: If an output socket button is disabled (Text in white) and is touched, a message temporarily pops up explaining why.



Note that with Stereo or Surround busses, you cannot route the buss signals separately - by assigning the socket for the left most buss channel, you also assign the next socket(s) in the socket Group to the remaining buss signal(s). The illustration above shows a stereo group, so choosing socket **Loc L1** would assign the left buss signal to socket **Loc L1**, and the right buss signal to socket **Loc L2**.

NOTE: The order of signals output from a surround stem can be adjusted by using the **System/Service/Configure Hardware** menu. This closes the current session and opens the **DiGiConfig** program - For more information, please refer to the **Interconnection and System Setup** section.

3.2.8 Buss Signals as Input Sources .....

The output results from output channels can be returned into input channels by scrolling to the bottom of the Signal Group listing at the input stage of a channel.

You will see Signal Groups for each type of buss which is in the current console configuration (eg Mono, Stereo, LCRS etc) Touching the Signal Group buttons will show the separate legs of each buss and these signals can then be selected as inputs in the normal way.

These signals are labelled with a "~" to indicate that they are buss results and are therefore subject to delays.

3.2.9 Headphones .....

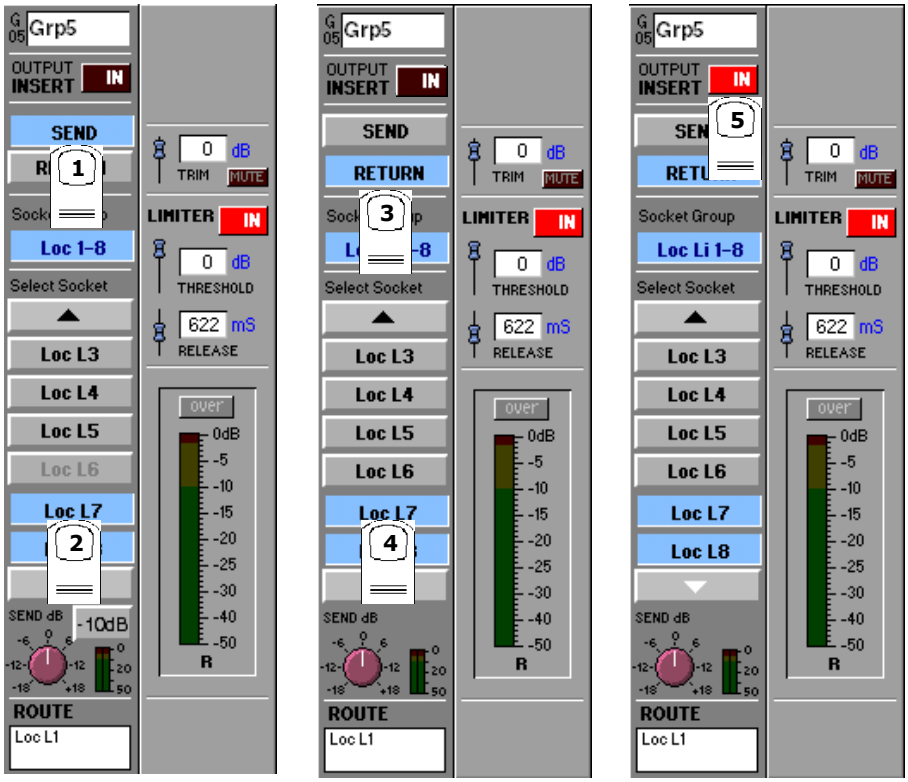
The headphones are always fed by the monitor/solo1 signals and there is a dedicated level control in the worksurface **Monitor** section on the right hand side of the worksurface.

3.2.10 Output Insert .....

In the buss master routing panel there is an Output Insert facility that can be used to route signals to effects and processing. This is particularly useful if you wish to use outboard processors on the output of a buss.

In this situation the output should be routed to its normal destination but it will be diverted through the Send and Return for processing.

Touch the **Send** button and select the input to the required processor, then touch the **Return** button and select the output from the same unit. Then touch the **Output Insert** button to switch it on.



IMPORTANT NOTE: The Insert Send signal is post fader until the Insert Return is routed from a MADI signal.

3.3 The Matrix

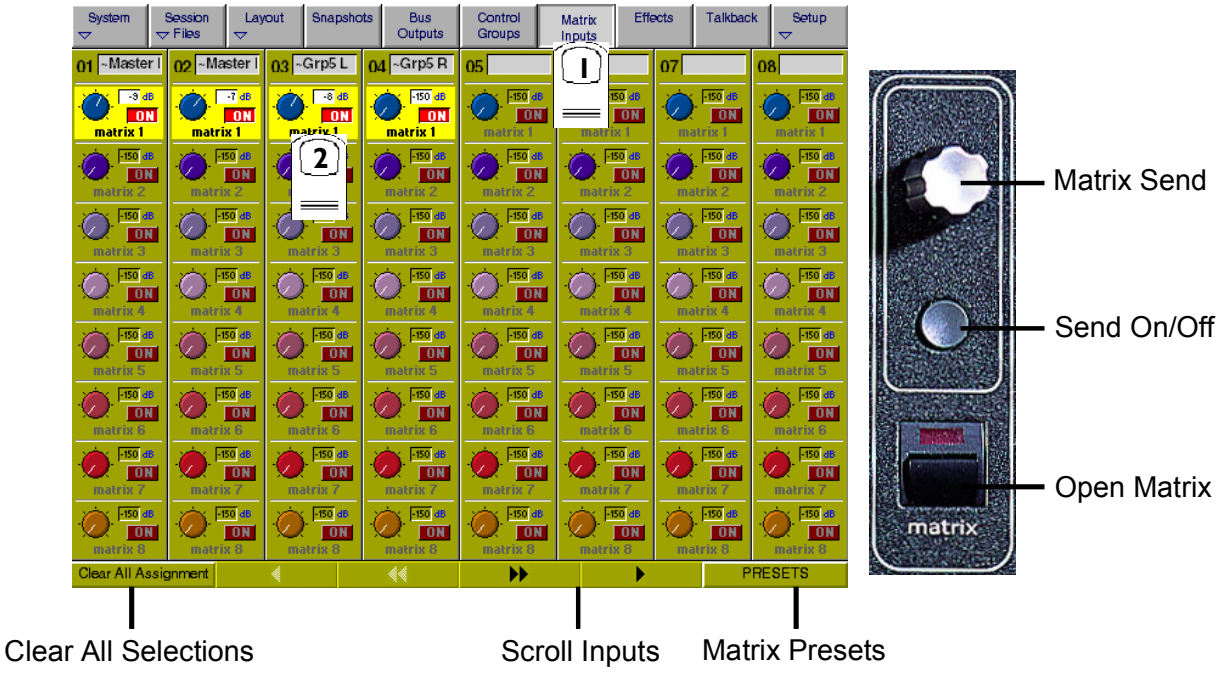
The 38x8 way Matrix is accessed by touching the **Matrix Inputs** button on the Master Screen or the **Matrix** button on the far right of the worksurface Master Section.

Inputs are selected in the same way as the input channels.

Touch the on screen matrix send controls to select which ones you wish to adjust and they will become highlighted.

Use the worksurface **Matrix Send** control and **On/Off** switch to adjust the settings for all highlighted sends.

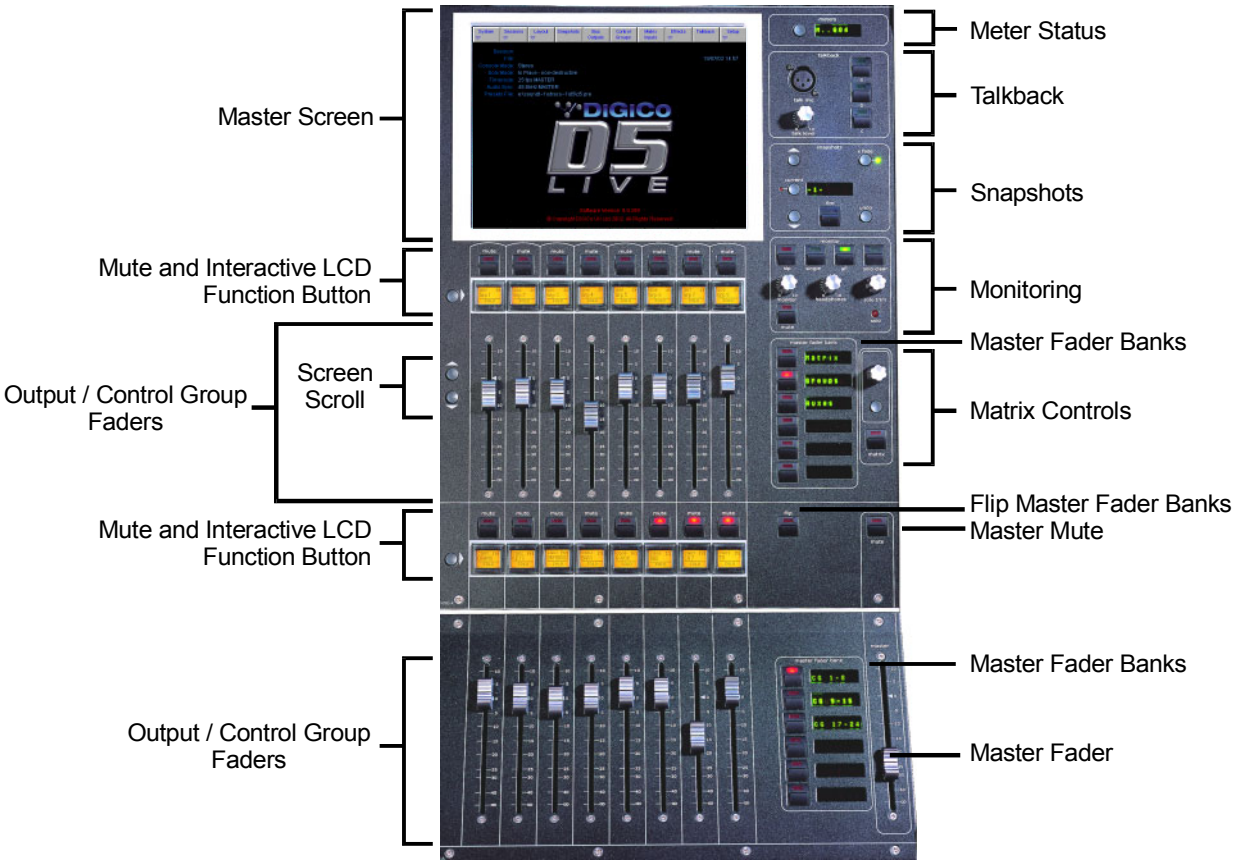
At the bottom of the panel there are buttons to **Clear All Assignment**, **Load and Save Presets** and **Scroll** buttons to view the other inputs.



Chapter 4
Master Section

4.1 Master Section

The Master section of the D5 console includes the output controls described in the previous chapter and the meter bridge above it:



4.1.1 The Master Screen .....

Master Screen Status Display

The master screen displays information on the current session, mode, timecode and sync at the top left. The system date and time are displayed on the right Further system information can be found in the Diagnostics Panel (System Menu).

4.1.2 The Menu Buttons .....

System Menu

This menu, displayed by touching the System button, contains additional buttons which display system information.

System Shut Down Button

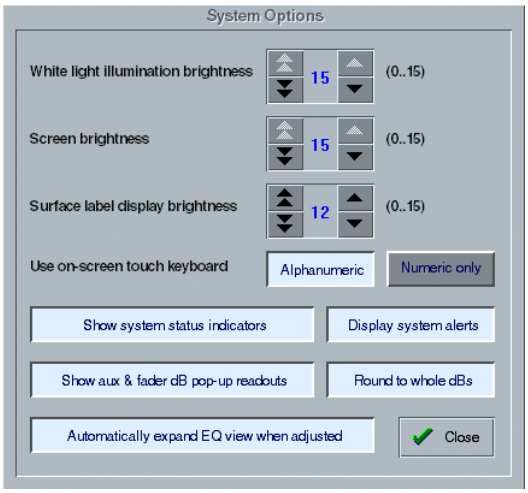
This command should be used to shut down the console in normal operation.

Quit To Windows Command

In the Service menu, this button will close the D5 program but will remain in a Windows environment. It is unlikely that the user will need this option in normal operation.

System Options

To adjust the level of lighting on the console use the up down arrows next to the value boxes for **White Light Illumination Brightness**, **Screen Brightness** or **Surface Label Display Brightness**



Use On Screen Touch Keyboard activates a touch sensitive keyboard which will automatically appear on screen when any label button (Channel, name, control group etc) is pressed.

While editing numeric-only data such as timecode, a small numeric keypad will appear.

This is intended as an alternative to using the computer keyboard itself.

Show System Status Indicators activates on screen information concerning the system. This will appear in the bottom right hand corner of the Master Screen.

Show aux and fader dB Pop-up Readouts activates yellow boxes which pop up showing the Auxiliary send and fader dB displays.

Display System Alerts activates on screen information to warn the user of any potential problem with the system.

Round to whole dBs switches any dB readouts to whole dB measurements instead of decimal places.

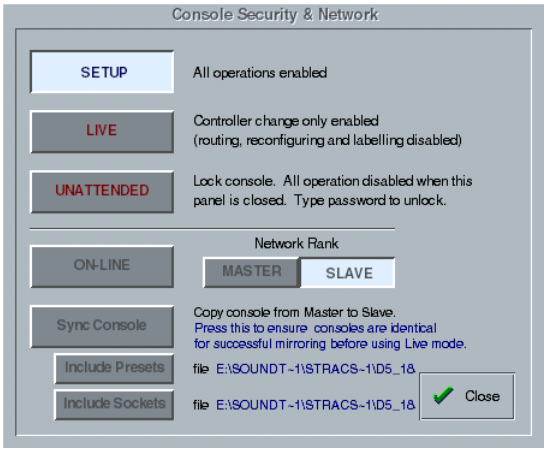
4.1.3 Console Security and Network Settings .....

The console has 3 modes of operation which dictate the types of operations that can be performed.

The **Setup** mode is essential if you wish to access all the console operations but when the basic setup is complete you may wish to switch to **Live** mode which only enables changes to controllers and not routing, reconfiguring or labelling. This may prevent accidental changes to the basic setup.

For total security the **Unattended** mode locks the console completely and all operations are disabled. This state can only be changed by typing a password - the standard password is D5.

Network settings and other functions in this panel are discussed in Chapter 6 - Multiple Console Setups.



4.2 Configuring the Console

As a digital console, the D5 is highly configurable, allowing a wide range of different bussing formats and channel configurations. This section describes how to use the command buttons on the Master Screen to Configure, store and recall sessions.

A Session file contains the following information:

- The console configuration.
- The Snapshots.

A Session file therefore represents a complete "snapshot" of the console, and is the simplest way to store and recall a complete system setup.

4.2.1 Session Files Menu .....

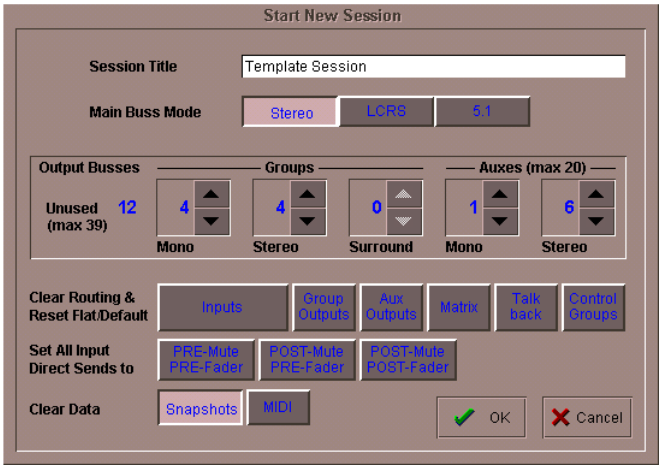
All of the configuration and file management functions are handled in the Session Files Menu which is accessed by touching the button on the Master Screen.

4.2.2 The New Session Panel .....

The **Main Buss Mode** defines the format of the Main buss as Stereo, LCRS Surround or 5.1 Surround. This also affects the options for selecting the Group and Aux buss formats: if the Main buss is stereo, the other busses cannot use the Surround formats, and if the main buss is Surround format, the other busses cannot use a different Surround format (although they can be stereo).

The **Output Groups** and **Aux Outputs** settings allow you to define the format and number of the Aux and Group busses.

The total amount of busses cannot exceed 39 (excluding one PFL Buss).



Note: The total number of busses available will be affected by the choice of solo mode selected in the Setup Menu / Monitoring panel.

For example, if you wish to use AFL within a 5.1 Surround console configuration, an extra 6 busses will have to be reserved for that purpose.

4.2.3 Clearing Settings .....

When you start a new session all current settings will be inherited by default but Snapshots will be cleared.

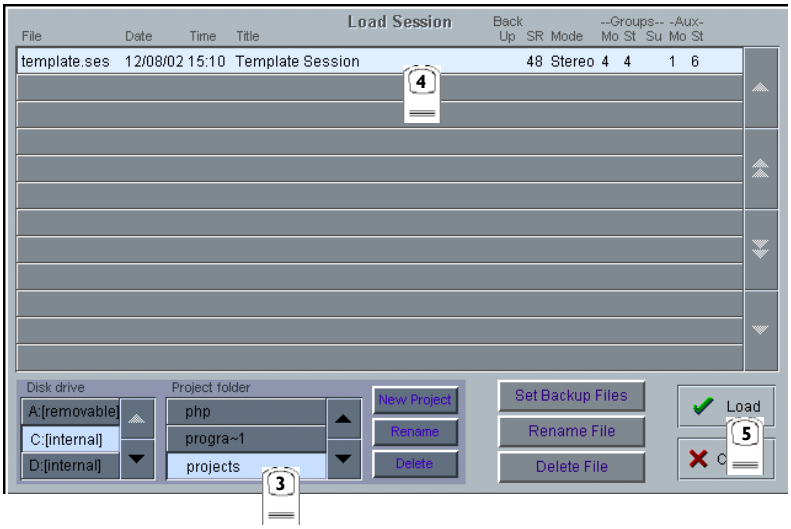
The buttons at the bottom of the **New Session** panel allow you to clear settings according to your own requirements. When the buttons are pressed, the relevant settings will be cleared. If you are simply adjusting the buss configuration of an existing console you are unlikely to wish to clear all of your current settings.

Note: Clearing Output Processors is linked to the Aux Outputs button.

You may also choose to **Set all Input Direct Sends** to Pre-Mute/Pre-Fader, Post-Mute/Pre-Fader or Post-Mute/Post-Fader for the new session. Remember that when all settings are cleared, any labelling or routing which you have done will be lost.

4.2.4 The Load Session Button .....

Touching this button will open the following panel.



This panel shows the contents of your drives and folders, listing any saved sessions with a note of the console configurations on the right hand side of the screen. These include the removable drive that can be plugged into the USB Data Port on the meter bridge.

Simply select the drive you require in the bottom left corner and then open a folder from the scrolling list next to it by touching it. You can then touch a specific session file to highlight it and touch the **Load** button to open the session.

Sessions can also be renamed or deleted in this panel using the **Rename File** or **Delete File** buttons in the same way.

The smaller **New Project**, **Rename**, and **Delete** buttons all refer to the folder listing and also appear in the **Save As New File Panel**

The **Set Backup Files** button is only relevant if your system is connected to a **NetTracs** server which is used in multiple console environments to store and backup files.

New Project

Creates a new folder with the default name Proj001. You can then rename this as required.

Rename

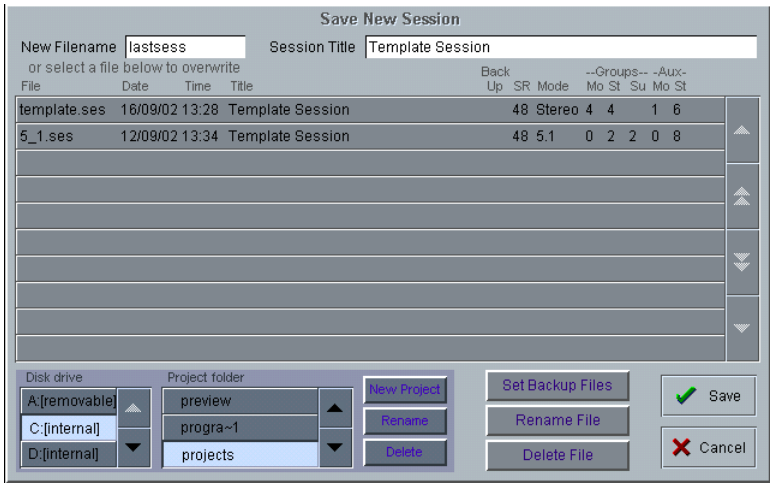
Touch this button and then touch the folder name that you wish to change. This will then be highlighted and you may type a new name.

Delete

Touch this button and then touch the folder name that you wish to delete. You will then be asked to confirm the deletion request.

4.2.5 The Save As New File Button .....

Touching this button will open the following panel.



This panel allows sessions to be saved as new files under new names. Select your drive and folder by touching in the boxes in the bottom left corner, then touch and type a new file name (with a maximum of 8 letters and no punctuation) in the box on the top left. You may also specify a session title which can be a different name to the file itself and may therefore be longer and more descriptive. Then touch the **Save** button to complete the process.

NB: If you touch a session name on the existing list, this name will automatically be selected as the new file name and touching Save will overwrite the old file.

4.2.6 The Save Session Button .....

This button which is found above the **Save As New File** button will save the existing session in the same location and under the same file name as it was previously saved or loaded from. It therefore serves as a "Quick Save" option to update an existing session.

Remember that this function will overwrite your last saved version.

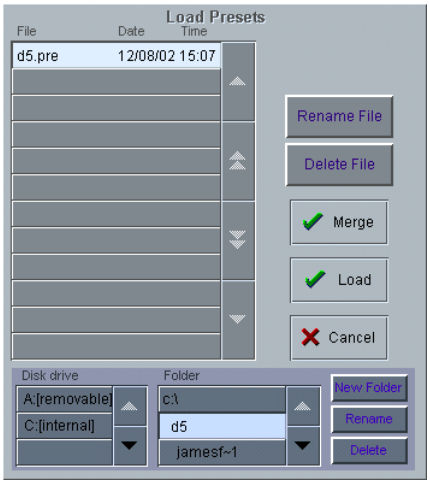
If you wish to save the session under a new name use the **Sessions** menu button and select **Save As New File** (See above).

4.2.7 USB Data Port .....

The console ie equipped with a Data Port which is designed for use with a key-ring style data card. To use this facility, insert the card into the USB Data Port and it will be recognised as an external drive. It will then appear in the Load and Save panels and can be used for storage and retrieval of sessions and presets.

4.2.8 Managing Presets .....

Presets (Channel, EQ and Dynamics) can be loaded and saved in any file ending with **.PRE**.
Under the **Sessions** menu, touch the **Load Presets** button and the following panel will appear:

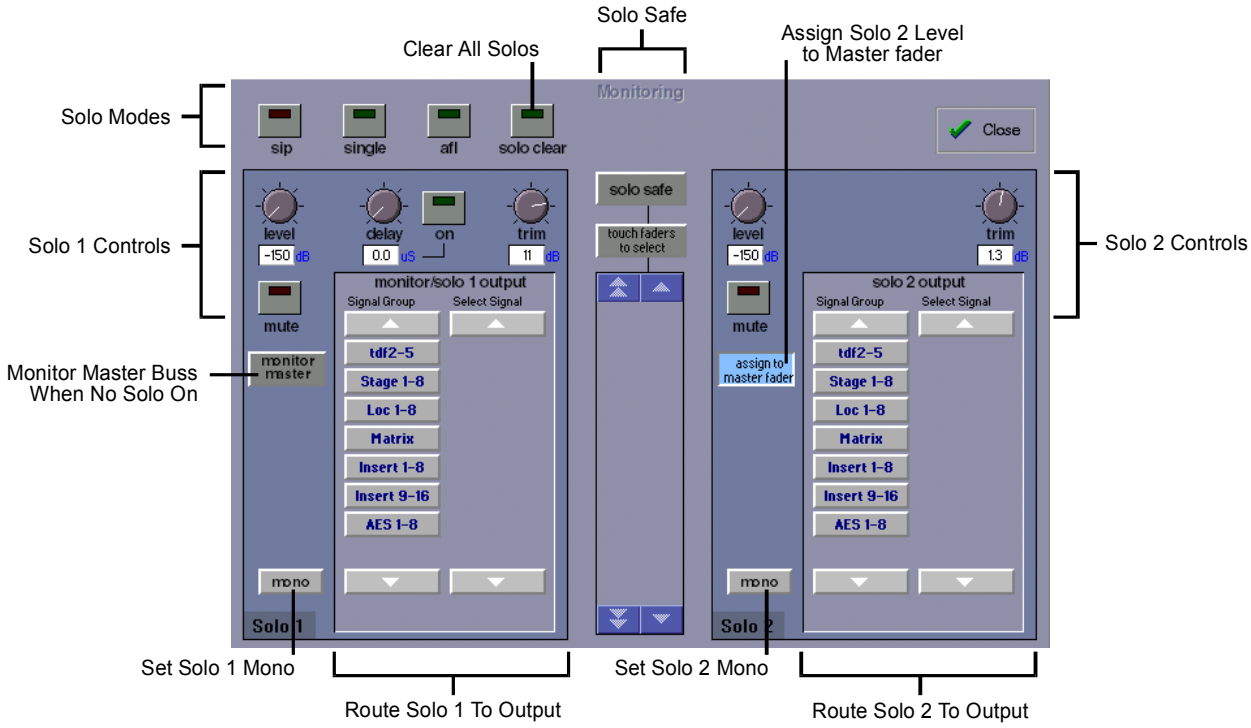


This panel shows the contents of your drives and folders, listing any saved presets.
Simply select the drive you require in the bottom left corner and then open a folder from the scrolling list next to it by touching it. You can then touch a specific preset file to highlight it and touch the **Load** button.
If you wish to keep your existing presets and add the contents of a saved presets file to them, touch the **Merge** button.
Presets can also be renamed or deleted in this panel using the **Rename File** or **Delete File** buttons in the same way.
The smaller **New Folder**, **Rename**, and **Delete** buttons all refer to the folder listing and also appear in the **Save Presets** panel.
To save a Preset file touch the **Save Presets** button and the following panel will appear:

Select a drive and folder in the bottom left hand corner of the panel, type a new name in the **New Filename** box and press the **Save** button.
NOTE: The current presets file is always saved automatically when the console is shut down

4.2.9 Monitoring .....

The **Monitoring** panel can be found under the **Setup Menu** in the Master Screen and some of the controls can be accessed on the right hand side of the Master worksurface.
It may be accessed at any time to change the monitoring setup.



There are two solo busses and each console solo button can be independently assigned to use Solo 1 or Solo 2 with a total of 16 inputs available to each solo buss..
Therefore, if the console was being used for stage monitors, the first solo buss could feed an "in ear" monitor and the second solo buss could feed a wedge.
To use **Solo 2** there must be sufficient busses available (at least two) and if Solo 2 does not appear on the panel a new session should be created to make these busses available.
The dedicated worksurface buttons control the relevant Monitor/Solo 1 functions and the Solo 2 level and trim may be controlled by touching the on screen control and using the Matrix rotary control on the worksurface.

To Select Solo 1 or 2 for a Buss or Channel

1) Press the **Master or Channel LCD Function** button for the relevant bank or channel.
2) Press the **Solo 1 OR 2 button** - All Solos are set to Solo 1 by default.
3) Press the **LCD button** for the Buss or Channel that you wish to switch to Solo 2 (It will change colour and Solo 2 will be indicated).
4) Press the **Master or Channel LCD Function** button to exit Solo 1 or 2 mode.
5) Press the **Solo** function button to return to the standard view and you will see Solo 2 indicated on the button.

PFL (Default mode with nothing else selected)

Mono pre-fader listen mode which only uses one reserved buss.

AFL

Monitoring the signal at post-fader level with full stereo or surround panning which uses the same number of busses as the Master buss.

SIP (Destructive Solo In Place)

This function leaves the soloed signal routed to its current destination and mutes all non-soloed signals. To hear the soloed signal(s), the relevant buss(es) should be monitored.

Note: This function can only be switched on by holding down the SIP button for 2 seconds.

Single

Single mode means that only one channel can be soloed at a time. If single is not selected, any number of channels can be soloed simultaneously.

Monitor/Solo 1 and Solo 2 Outputs

This allows you to select dedicated output sockets for the Monitor/Solo 1 and/or Solo 2 signals. Touch the required Output Signal Group button and then the first output (left) that you require from that group. The second output (right) will be automatically selected. A button at the bottom of the panel will switch the solo to **Mono**.

Monitor Delay

The monitor signal can be delayed by up to 160ms using the on screen rotary control. This control may also be adjusted by touching it on screen and using the worksurface Matrix rotary control.

Monitor Master

If this button is pressed, the master buss will be monitored when no solos are on.

Solo 2 Assign To Master Fader

If this button is pressed, Solo 2's Level and Mute controls can be adjusted using the Master Fader and Mute.

Monitor Mute

Touch the Mute button to cut the monitor signal.

Solo Clear

Pressing the Solo Clear button will ensure that there are no solos engaged anywhere on the console.

Solo Trim Level

The Solo Level may be adjusted by altering the dB value in the Trim Level box. If the worksurface "Solo Trim" control is adjusted, this panel will automatically appear and the Trim Level value will change to reflect any adjustment.

Solo Safe

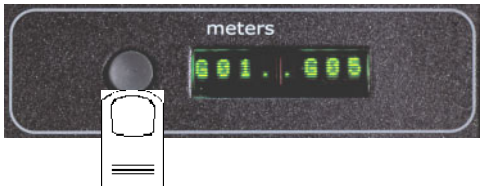
Solo safe may be used in any solo mode.

If the **Solo Safe** button is pressed, channels that appear on the list will be soloed automatically whenever any other solo is pressed.

To add channels to the list, press the **Touch Faders to Select** button and touch the required faders. When the **Solo Safe** button is switched off, the list is not affected and the Solo Safe function is disabled. The contents of the list are saved in the session files.

Note: If one of the channels on the list is soloed manually the other channels are not automatically soloed with it.

4.2.10 Master Section Meters .....



Successive presses of the **Meter Button** in the top right hand corner of the worksurface will toggle through three metering options, these are:

Meter Master Buss (Default)

Meter Monitors

The meters will show the selected type of monitor signal. (Master buss or PFL/AFL/Destructive SIP)

Meter Selected Busses

The meters in the console's Master section can be assigned to any console buss.

To assign Group or Aux busses to the Master meters, press and hold down the **Meter Button** in the top right hand corner of the worksurface and touch up to eight buss displays on the Master screen one after the other. Release the button when all the required busses are selected.

Upper Bank

The meters follow the currently assigned upper master fader bank. Unlike the other modes, the fourth displays stereo groups on one meter with twin peaks, just like input channels. Surround groups only meter left & right signals in this mode.

Note: If input channels have been assigned to master banks, the metered signal is pre-fader.

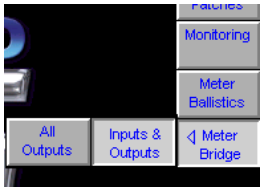
4.2.11 Meter Bridge Options .....

Touching the **Meter Bridge** button in the **Setup** menu allows you to choose between two options:

The default setting is **Inputs & Outputs** where the Input Section meters show the corresponding Input Channel signal and the Master Section Meters show the outputs.

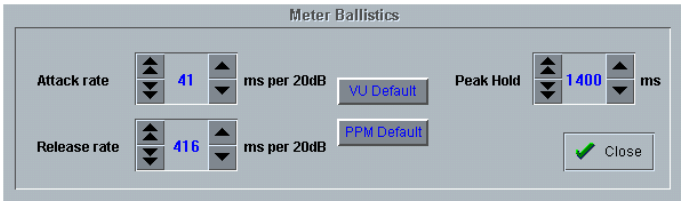
The other option is **All Outputs** where the output signals are shown consecutively across the entire Meter Bridge.

In this mode, holding the **Meter Button** and touching a row of on-screen outputs will determine which outputs are assigned to the meters on the first Input Section.



4.2.12 Meter Ballistics .....

Touching the **Meter Ballistics** button in the **Setup** menu opens the following panel:



This allows ballistics to be altered for all meters on the bridge and screens using the up/down arrows on the panel.

VU Default sets Attack and Release to 300ms.

PPM Default sets Attack to 41ms and Release to 416ms which are the engine defaults.

Peak Hold time can be adjusted to a value between 10 and 9999ms

4.2.13 Restart and Recovery .....

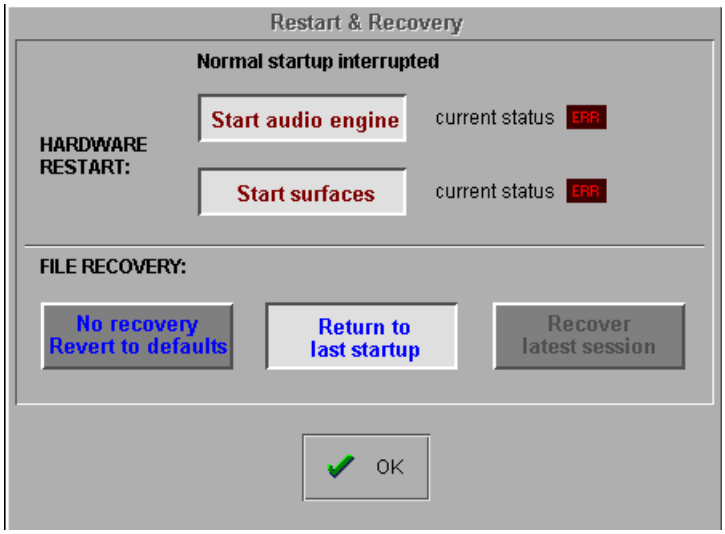
When changes are made to a session it is important to save the session regularly as the recovery process uses the last saved session.

In the unlikely event of a console software crash, an abnormal shutdown, hardware or power failure, D5 will recover the latest session automatically and it can be rebooted without losing audio.

If there is any problem with this process, holding the keyboard **Shift Key** during the reloading of D5 software will open the following panel:

IMPORTANT NOTE: The easiest method of doing this is to Quit To Windows and then reload D5 software from there.

If you are holding the **SHIFT Key** when Windows is reloading, the D5 Surfaces program and D5 software itself will not load automatically. If this situation occurs be sure to restart Surfaces.exe from the Windows Start menu before loading D5 software.



This allows the options of:

1) Rebooting the audio engine or worksurface.

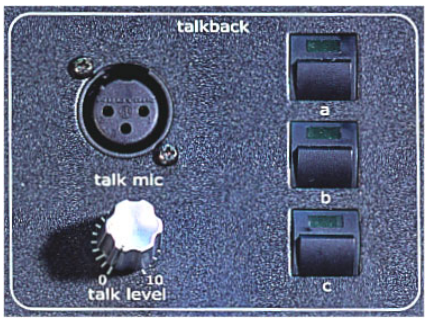
2) Recovering the last session from NVRAM and last saved session file.

2) Loading from the last startup session file.

3) Not loading any file and creating a default stereo console.

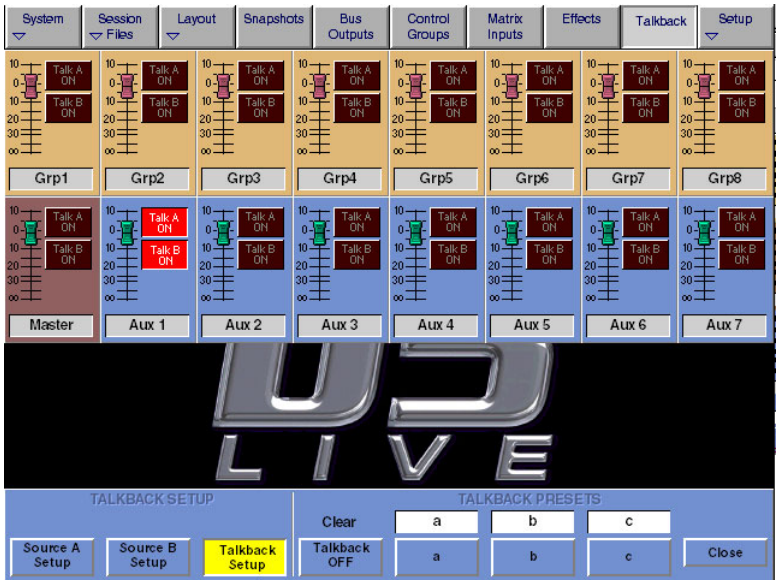
4.3 Talkback

The console includes a built-in talkback microphone socket situated in the top right hand corner of the worksurface, and there is an input socket provided on the rear panel for a 2nd remote talkback microphone. There are two Talkback channels, A and B, and both can be activated by buttons on the worksurface in conjunction with three Talback Feed Presets, labelled a,b and c. Both channels are controlled by a level control on the worksurface.



4.3.1 Talkback Configuration Button .....

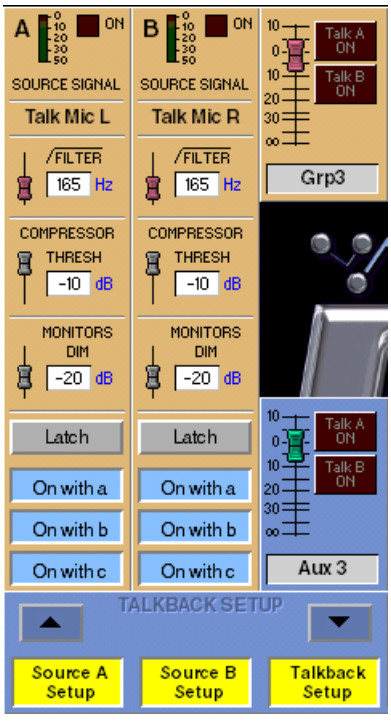
The two talkback channels can be mixed independently onto any buss using the **Talkback Setup** panel, which is displayed on the Master screen when the on-screen **Talkback** button is touched.



When you first touch the on-screen Talkback button, only the bottom section of the panel is displayed - push the Talkback Setup button to display the full mixer panel.

4.3.2 Talkback Mic Setup .....

Talkback channels A and B can be controlled separately, by touching the relevant button at the bottom left of the Talkback configuration panel.



Talkback channels A and B can be sourced from any input signal, the Local (Top) mic, the Rear Mic, Tone or Noise using the buttons at the top of the Channel.

Both channels could be sourced from the same mic but each one could route to different output destinations.

Each channel has a high-pass filter, a compressor with variable threshold, and a control for the Dim level which is applied to the monitor signal when the Talk switch is pushed. These can all be adjusted by touching them on-screen, then using the fader below the display.

Below these controls are buttons which configure the talkback switch. The switches can be latching or momentary, and you can also choose to disable either channel altogether.

The worksurface Talkback buttons A, B, and C may be used to activate either Talkback Channel by pressing the required combination of the **On With** buttons.

4.3.3 The Talkback Mixer .....

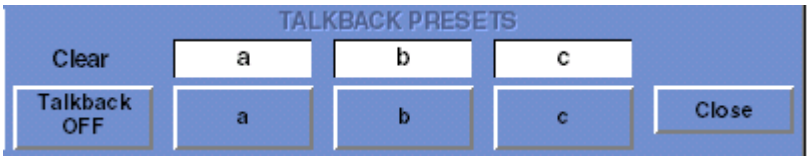
Each output buss has its own level control in the Talkback mixer, along with a switch for connecting each Talkback channel to the buss at the chosen level.

The level controls can be adjusted using the faders below the screen, with each row of busses assigned to the physical faders by touching one of the rows of faders in the display.

4.3.4 Talkback Presets .....

You can set up three different Talkback Presets, which specify routing configurations for the talkback channels by storing the settings of the talkback feed switches for each output buss (though they do not store the mic signal levels sent to each buss).

Once you have one or more stored presets, they are recalled automatically when the corresponding worksurface Talk button is pressed (**a**, **b** or **c**) which also activates channels A and/or B if they are enabled. You can also switch between them without activating talkback by touching the buttons at the bottom of the Talkback panel. You can name each routing preset by touching the white label above its button and typing a name on the keyboard.



Changing Talkback Presets

Any changes you make to the talkback mic routing while a preset is selected is automatically stored as part of that preset.

4.4 Control Groups

4.4.1 Creating Control Groups .....

Any number of input channels and output channels can be connected to one or more of the 24 Control Groups. They can then all be operated from a single worksurface control. Changes to the Control Group fader, mute or solo controls will affect all channels connected to the group.

To set up Control Groups:

1) Touch the **Control Groups** button on the Master screen.

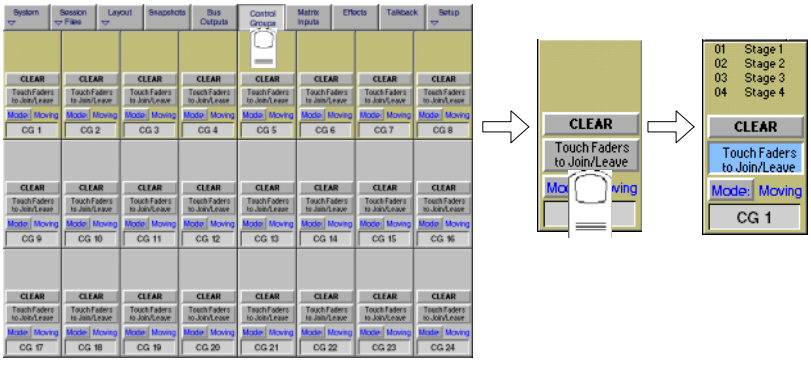
2) Touch the **Touch Faders To Join/Leave** button on the required Control Group (1-24).

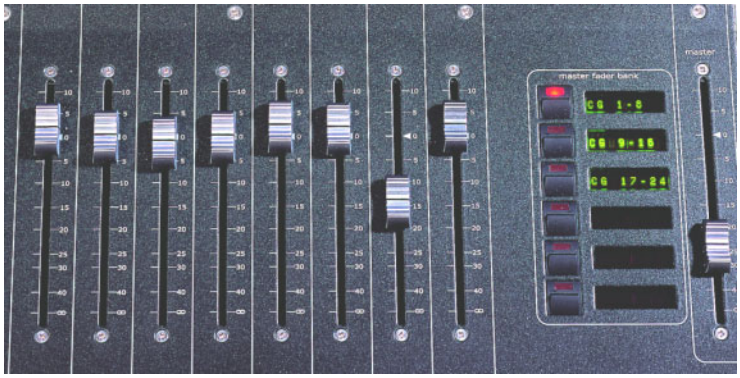
3) Touch the **faders** on the channels that you want to include. (Touching the fader again will remove it from the group).

4) Touch the **Touch Faders To Join/Leave** button again to turn the function off.

5) Press the on screen **Mode** button to select **Moving** faders, **VCA** style static faders or **Mutes** only.

6) Use the worksurface fader, mute and solo to adjust settings for the Control Group members.





A list of all the connected channels and their names is displayed above each Control Group display, touch the area above the **Clear** button to expand this list.

When a fader is touched it is highlighted in the list.

You can also clear all the channels from a Control Group by pressing **Clear**.

When a channel is a member of a Control Group, its own controls can still be adjusted independently of the other Group members. Adjustments to fader levels are transmitted to the Group members as dB changes, so that a level increase of 2dB on the Group fader will increase all the member levels by 2dB, irrespective of the relative levels of the individual channel faders.

4.4.2 Naming Control Groups .....

Like inputs or busses, Control Groups can be named by touching the name display on the screen (default CG1, CG2 etc), and typing a new name on the console keyboard.

4.4.3 Mode Option .....

Successive presses of the **Mode** button above the control group's label allows the control group to function in one of three different ways:

Moving - The default mode where the input channel faders move to reflect any adjustment made with the Control Group fader.

VCA - The Control Group fader controls the level of an input channel without moving the channel's fader.

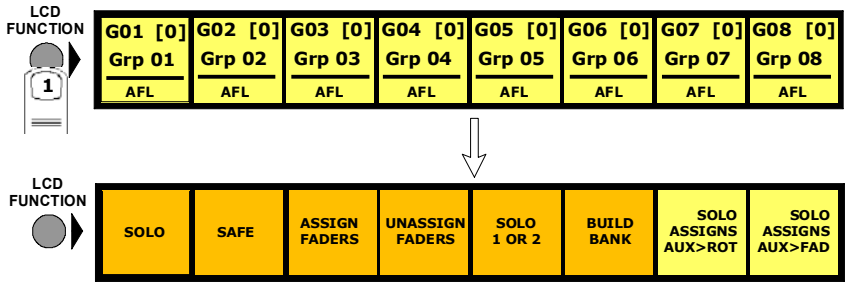
Mutes - Only Input Channel Mutes are affected by the Control Group, not faders.

4.5 Master LCD Function Buttons

Pressing the **Master LCD Function** button on the left hand side of the Master Section allows you to select the function that the individual **Master LCD Buttons** are currently assigned to.

To Show Functions

Press the **Master LCD Function** button.



To Make Masters Safe From All Snapshots

The **Safe** function makes selected Group, Aux, Matrix and Control Group Master Faders safe from all Snapshots.

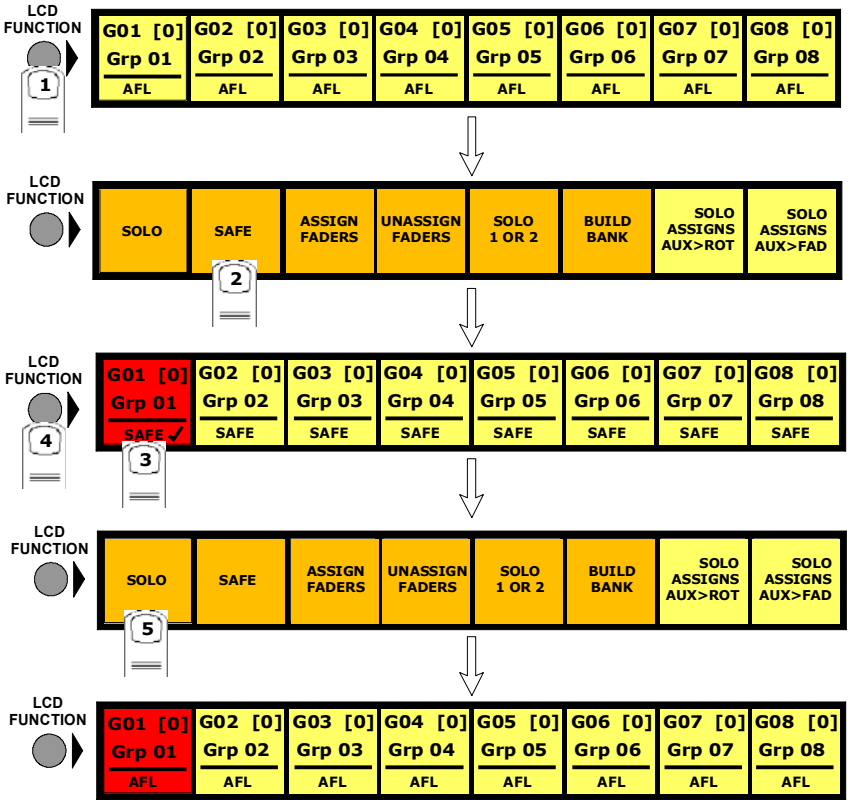
1) Press the **Master LCD Function** button for the relevant bank.

2) Press the **Safe** button.

3) Press the **Master LCD** buttons for the Masters that should be Safe (they will turn red and a tick will appear).

4) Press the **Master LCD Function** button to exit Safe mode.

5) Press the **Solo** function button to return to the standard view.



Auxiliary sends can be controlled by the console's channel faders or rotaries in several different ways.

There are **Assign Sends To Faders** and **Assign Sends To Rotaries** buttons in the **Auxiliary Buss Control** panel **(See Section 3.2.2 - Buss Control Button)** which activate these functions but for faster access there are options to activate them by a **Solo Press** on the Auxiliary Masters.

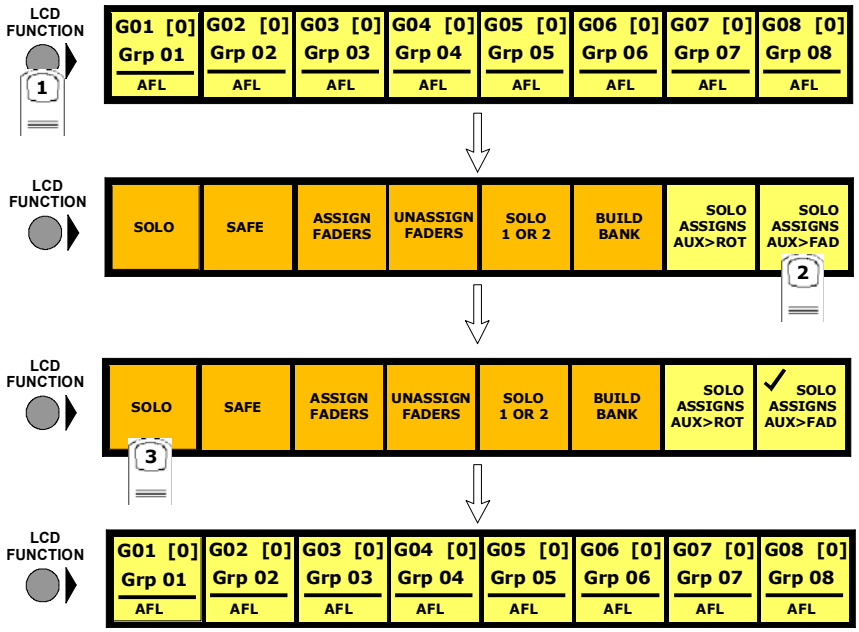
To switch these functions on or off:

Solo Assigns Aux To Faders

1) Press the **Master LCD Function** button.

2) Press the **Solo Assigns Aux > Fad** button (a tick will appear in the box).

3) Press the **Solo** function button to return to the standard view.



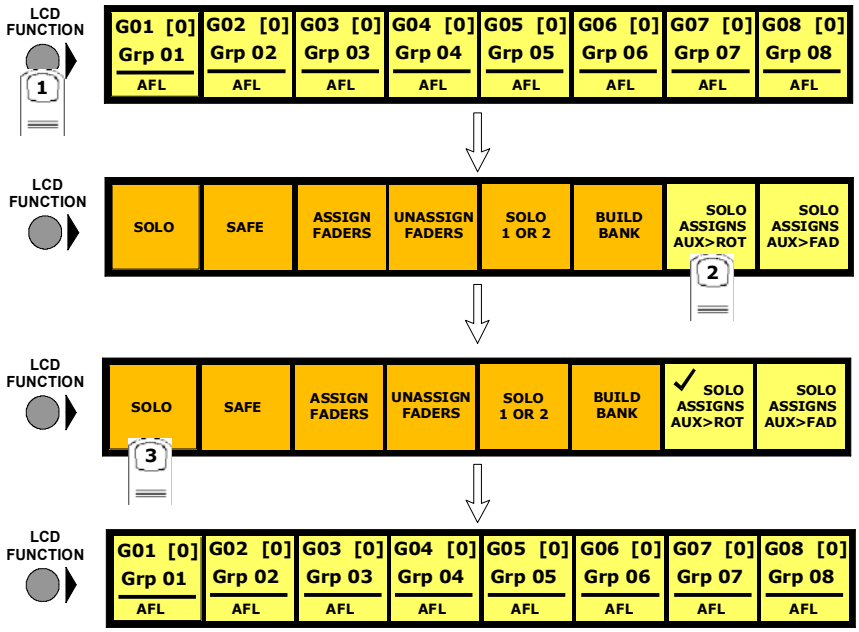
Solo Assigns Aux To Rotaries

When this function is activated and an Auxiliary Master Solo button is pressed, the Input Channel screen will automatically scroll to the relevant auxiliary and allow instant control of the send.

1) Press the **Master LCD Function** button.

2) Press the **Solo Assigns Aux > Rot** button (a tick will appear in the box).

3) Press the **Solo** function button to return to the standard view.



The contents of a Master Fader Bank can be customised at any time by adding or removing faders from it.

To Assign Faders To Banks

1) Press the **Master LCD Function** button for the relevant bank.

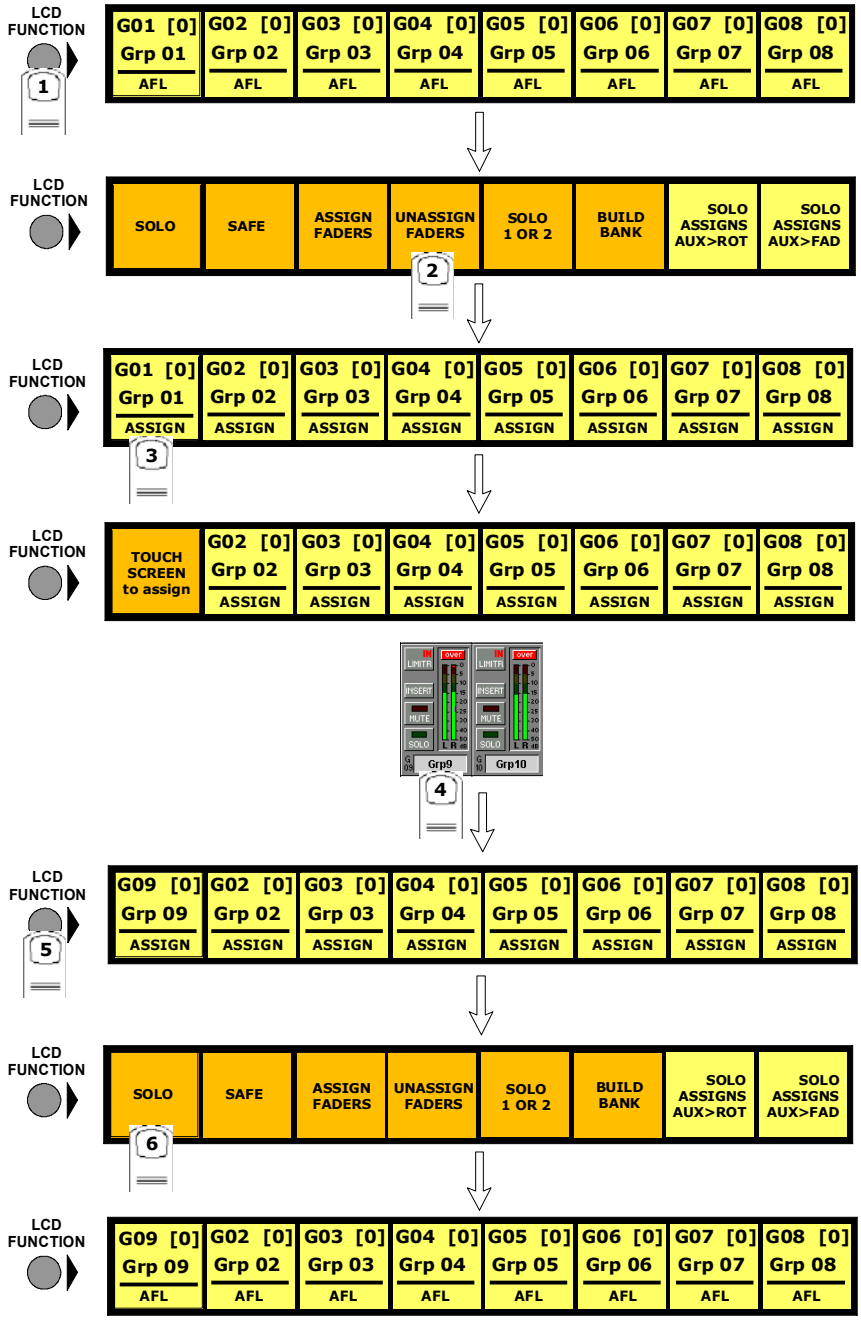
2) Press the **Assign Faders** button.

3) Press the **Master LCD** button for the Master fader that you wish to use.

4) Touch the on screen meter for the **Buss** that you wish to Assign or touch an **Input Channel** screen or **Control Group** display. If several LCD Assign buttons are pressed, they will be filled from left to right starting with the channel that is touched.

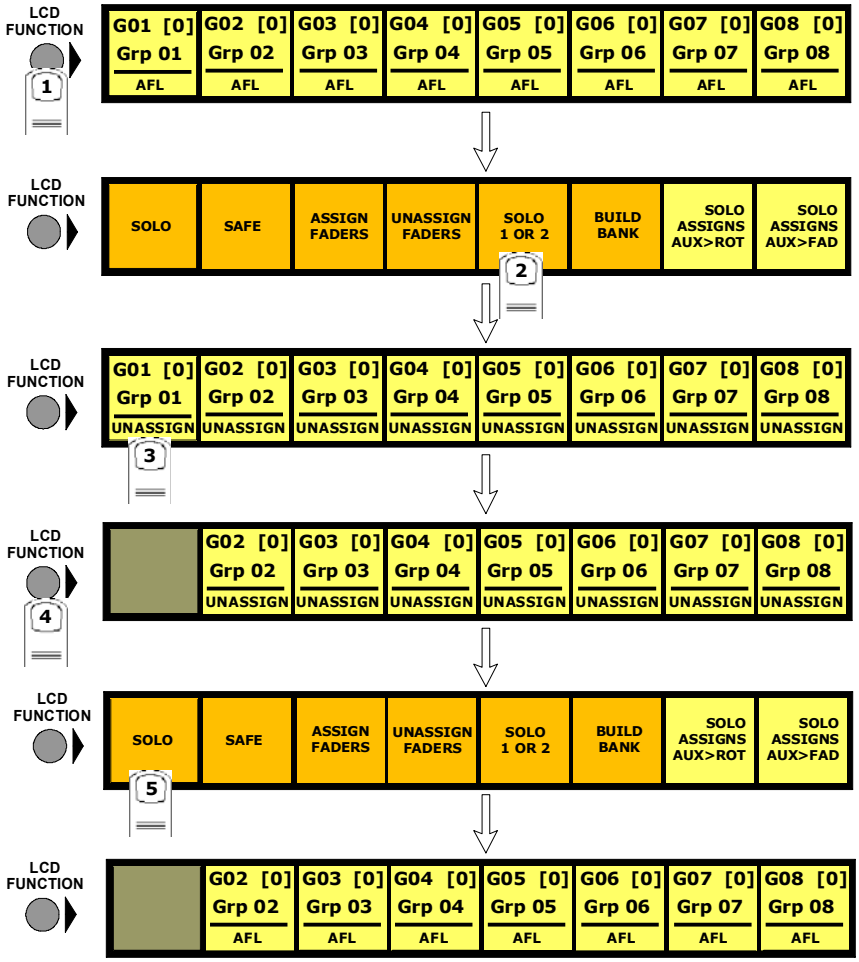
5) Press the **Master LCD Function** button to exit Assign Faders mode.

6) Press the **Solo** function button to return to the standard view.



To Unassign Faders From Banks

1) Press the **Master LCD Function** button for the relevant bank.
2) Press the **Unassign Faders** button.
3) Press the **Master LCD** buttons for the fader(s) that you wish to Unassign.
4) Press the **Master LCD Function** button to exit Unassign Faders mode.
5) Press the **Solo** function button to return to the standard view.



Master Fader Banks can also be built from scratch in the following way:

To Build A Bank

1) Press the **Master Fader Bank** button for the bank that you wish to build.

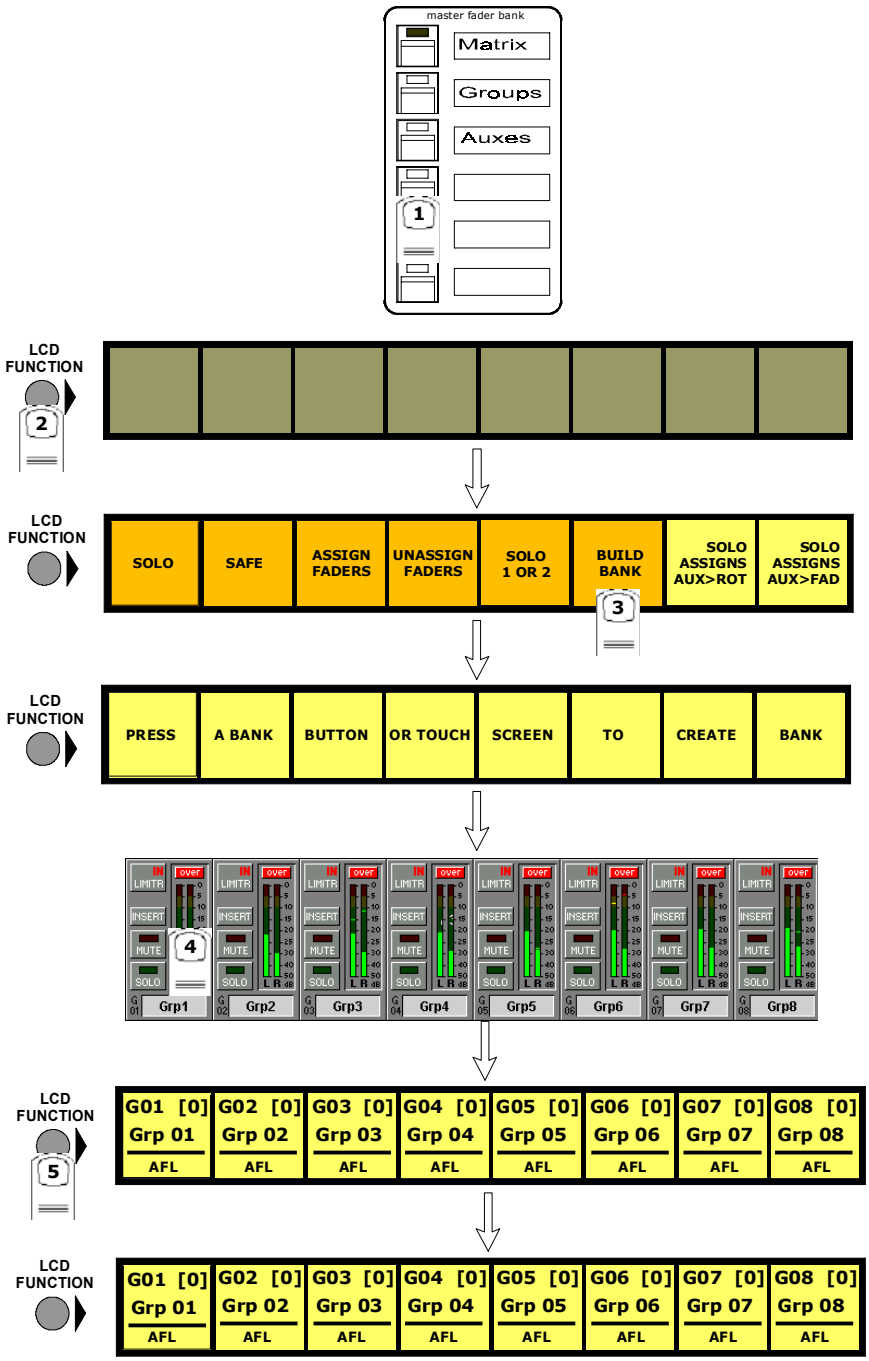
2) Press the **Master LCD Function** button for the relevant bank.

3) Press the **Build Bank** button.

4) Touch the on screen row, press a Bank button or touch an input screen for the **Bank** that you wish to Build. If a bank button is touched, the entire bank is copied to the current Master bank including the Bank Label. If a screen is touched then eight input or output channels or Control Groups will be assigned from left to right starting with the channel that you touched. On the master screen, output and Control Group rows wrap to the next row down.

5) Press the **Master LCD Function** button to exit Build Bank mode.

6) Press the **Solo** function button to return to the standard view.



4.6 Snapshots

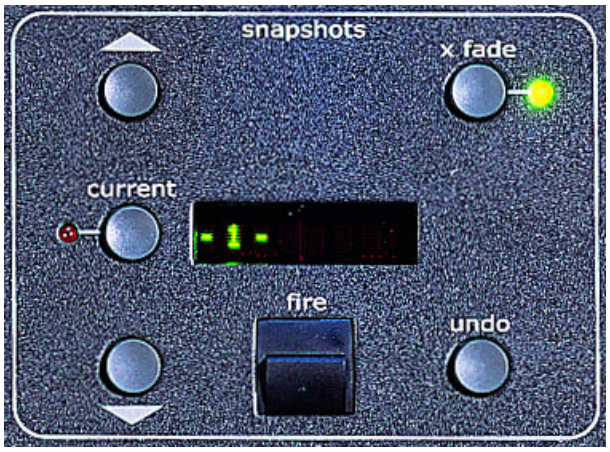
Any number of Snapshots of the entire current console settings can be stored and recalled using the Snapshots panel. (This is only limited by system memory)

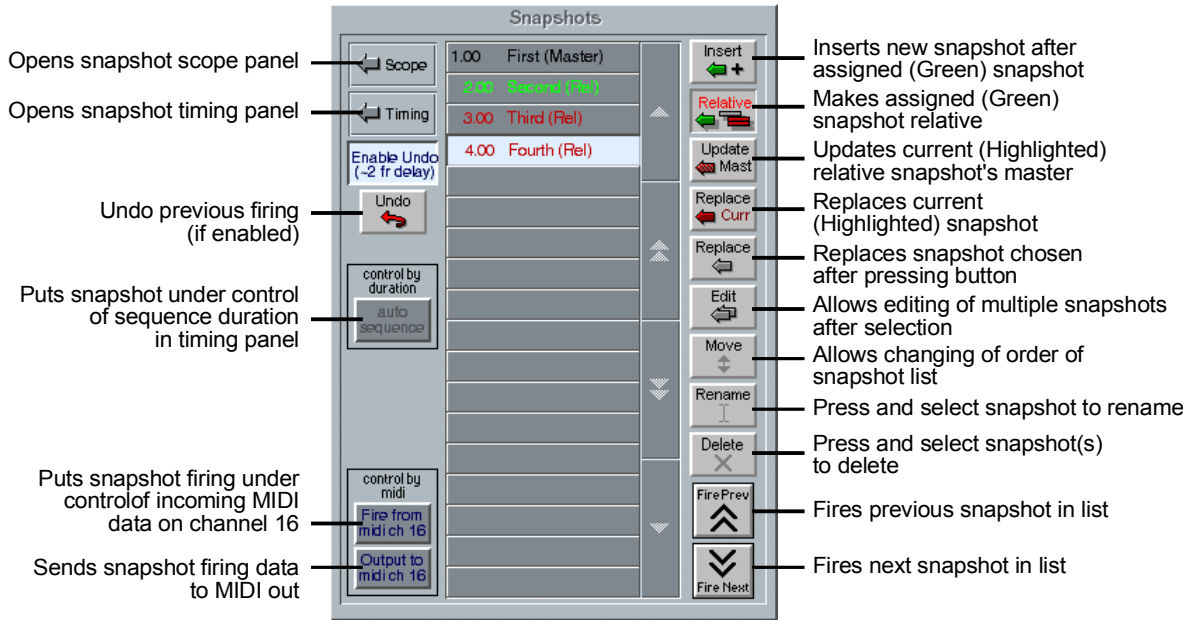
These Snapshots can be absolute or relative to another snapshot.

The scope of the snapshot can be set by controller or by input channel.

To display the Snapshots panel, touch the Snapshots button at the top of the Master Screen.

Worksurface controls can be found to the right of the Master Screen.





Note: The current snapshot appears in the panel as the highlighted (pressed) button. The snapshot name displayed in **green** indicates that it is the assigned to the worksurface and its name is indicated in the display. The **Fire** button recalls this assigned snapshot and highlights it in the screen list as the current snapshot.

If the current snapshot button shows an asterisk next to the number (eg. 001*) this indicates that a controller has changed since the snapshot was fired.

If a Snapshot name appears in **black** in the list it, is a **Master Snapshot** and if it appears in **red**, it is a **Relative Snapshot**.

4.6.1 Master and Relative Snapshots .....

A Master Snapshot (black entry in the list) is an absolute snapshot of the current state of all the console controls.

A Relative Snapshot (red entry in the list) is a snapshot of the current state of all the console controls but the variable controls such as the fader levels and auxiliary sends are stored as offsets from the previous Master Snapshot in the list. Therefore, if the level of a control is changed in the Master Snapshot the same control will change by the same amount in all of its relatives.

Commonly, a Master Snapshot would be used as a starting point at the beginning of a performance and would contain all the basic routing and levels. The subsequent Snapshots would be Relative and would contain the changes that were required for each different part of the performance. If used in this way, any global changes that are made to the Master Snapshot will automatically update the relatives without changing each snapshot individually.

4.6.2 Storing a Snapshot .....

To store a snapshot of the current state of all the console controls, simply touch the Snapshot panel's **Insert** button and a new snapshot will be inserted below the currently assigned (green) snapshot. Alternatively, touch an unused button in the list and a new snapshot will be added to the end of the list, then type a name for the snapshot. The first Snapshot must always be a Master Snapshot.

To store a Relative Snapshot, you must first create a second Master Snapshot and this can then be changed to Relative by assigning the snapshot to the worksurface using the **Scroll Up/Down** buttons (it will then be in green text) and pressing the **Relative** button. The details of the snapshot should then be shown in red.

Once the Relative button is pressed, all subsequent snapshots will also be Relative until you choose to change them. All snapshots with the exception of the first Master Snapshot may be made Relatives or Masters at any time.

4.6.3 Recalling a Snapshot

To recall a snapshot, simply touch the snapshot button you require. The button will then remain highlighted until the next snapshot is recalled.

Alternatively, the buttons on the Worksurface on the right of the screen provide **Scroll Up/Down** buttons to change the assigned snapshot named in the worksurface display and listed on screen in green.

The **Fire** button then recalls the assigned snapshot.

The **Undo** button is only enabled if the **Enable Undo** option button is pressed on the screen.

The **x fade** button has a LED which indicates whether the assigned snapshot has cross-fading enabled, and may be used to switch off this feature temporarily while recalling the snapshot.

Snapshot firing can also be controlled by specific events on MIDI channel 16 (See Snapshots and MIDI).

4.6.4 Replacing a Snapshot

To update or change a snapshot, set the console controls as required and then touch the **Replace** button followed by the snapshot that you wish to amend. A dialogue box will appear asking you to confirm the action.

There is also a button with an option to **Replace Current** snapshot and this can be used to replace the last snapshot that was fired.

Note: The Current snapshot is not necessarily the one whose name appears on the worksurface, this is the Assigned snapshot. For a snapshot to be Current it must have been the last one that was fired and be highlighted in the on screen panel's list.

4.6.5 Update Master

The **Update Master** button can be pressed at any time when the current (highlighted) button is Relative. This will copy the current console settings into the Relative Snapshot's Master but subtract the relative values from it first.

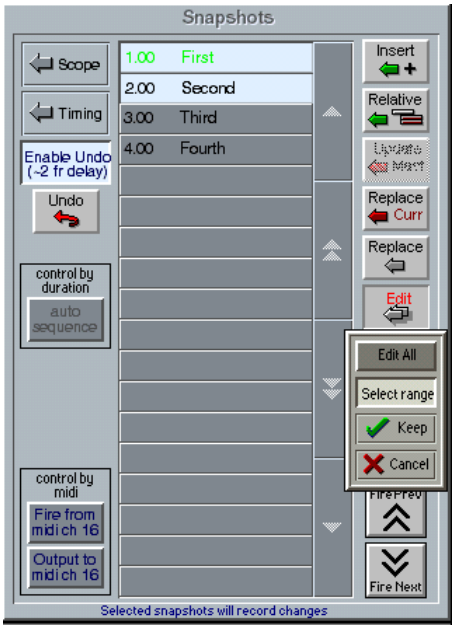
Therefore if you are working in a Relative Snapshot and realise that the changes you are making need to be applied to the other Relatives as well you can immediately press Update Master even though the Master is not the current snapshot.

4.6.6 Editing Multiple Snapshots

Individual controller changes can be written to several snapshots simultaneously using the **Edit** button. This does not replace the complete snapshot associated with the button.

When the Edit button is pressed, a panel pops up allowing **All**, a **Range**, or individual Snapshots to be selected by pressing their buttons.

If you press the **Select Range** button, touching the first and last snapshots in a range will automatically select all the snapshots in that range.



With the Edit button pressed, pressing the Snapshot buttons does not fire the snapshots, it only selects them for editing.

The selection may be changed by pressing and releasing snapshot buttons at any time during the operation of the Edit command, so a variety of controllers or routes may be changed in a variety of snapshots before completing the operation by pressing the **Keep** button.

The Snapshots window may even be closed to gain access to other editable functions - In this case, a warning message will appear to advise the user that they are still in snapshot edit mode.

While any Snapshot button is selected, changes to any snapshottable controller, routing changes, and any changes to the Snapshot Scope controls can be written to every selected Snapshot, overwriting the previous settings.

Pressing the **Keep** button confirms the changes.

For example, if Snapshots 1 and 2 are selected and the input gain for channel 1 is changed, subsequent recall of Snapshots 1 or 2 will set channel 1's input gain to the new value.

Only channels which are altered while the Edit command is active will be affected and only in snapshots that are selected at the time.

If **Cancel** is pressed instead of **Keep**, all snapshots changed since the Edit button was pressed are returned to their original states, irrespective of which are currently selected. This allows any accidental changes to be undone. If there is not enough memory to store a copy of every edited snapshot, a warning is displayed and the **Cancel** button is disabled.

A change in any of the following settings can be copied to all selected snapshots in edit mode:

Snapshottable controllers

Routing

Relay outputs

Selection of MIDI snapshots

Crossfade times

Control Group members

Gang members

All Channels and Exclude buttons in Channel Scope

NOTE: Banks (Layout) settings are excluded from the Edit operation, since it is likely that scrolling, etc. may be needed to access channels which need to be changed without wanting to change the stored layout.

Changing Snapshot Banks can only be done with the **Replace** command on one snapshot at a time. If you recall the Snapshot before changing the layout, all other settings stored in the Snapshot will remain unchanged.

Touching faders to add or remove channels to or from the scope is also copied to all snapshots selected for Editing, but note that the choice between add or remove depends on the currently displayed list.

IMPORTANT NOTE:

When editing the channel scope by touching faders, the Snapshot with the light horizontal line next to it whose Scope is currently being displayed will be updated whether it is selected for editing or not.

During the Edit command, all other scope controls do not affect the snapshot whose scope is being displayed, only those snapshots selected for editing.

4.6.7 Moving a Snapshot .....

If you wish the Snapshot list to appear in a specific order, you may change the order of the list by moving the entries. Touch the **Move** button and then touch the Snapshot that you wish to move. You then touch the point in the list where the snapshot should be moved to.

Note: If a Relative Snapshot is moved above its own Master Snapshot in the list it will become Relative to the previous Master Snapshot, but only when it is fired. Therefore the list can be rearranged in any way without changing the data in the snapshots.

4.6.8 Renaming a Snapshot .....

To rename a snapshot, touch the **Rename** button, then the name that you wish to change and enter a new name using the keyboard.

4.6.9 Deleting a Snapshot .....

To delete a snapshot, touch the **Delete** button and then the Snapshot that you wish to delete. You will then be required to confirm the deletion.

Note: You cannot delete the first Master Snapshot in the list if it has Relative Snapshots below it.

4.6.10 Snapshot Undo .....

If the button labelled **Enable Undo** is pressed, an undo button will appear and the worksurface undo button will be enabled.

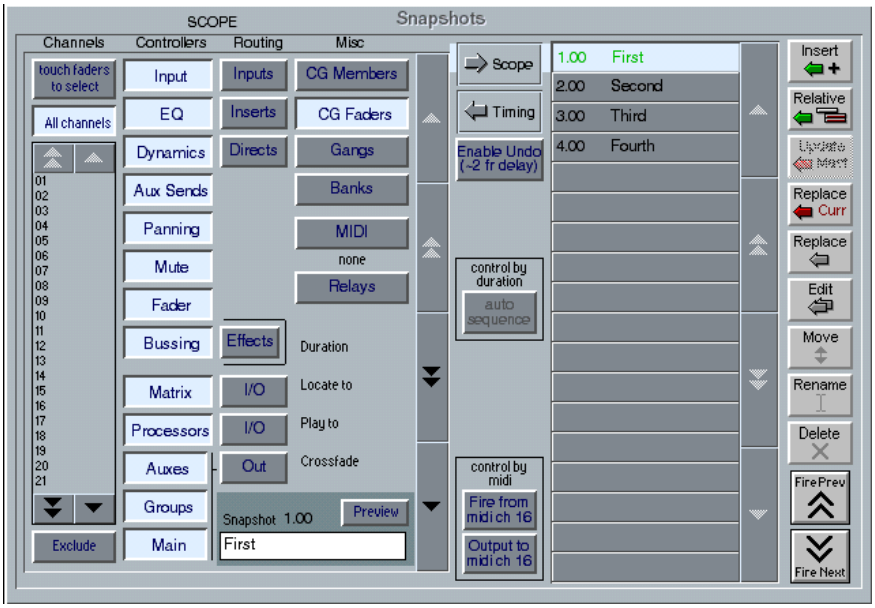
When a snapshot is fired, a separate hidden snapshot of the complete console is stored before the fired snapshot has its effect.

If the Undo button is pressed, the hidden snapshot is fired using the same scope as the previously fired snapshot to undo its effect.

This sampling before firing can take up to two frames to store depending on console configuration and should therefore be switched off in situations where timing is important (eg when synchronising snapshots to MIDI)

Note: The Undo remains possible throughout any subsequent operation - changes to controllers will be undone along with the last fired snapshot if the Undo button is pressed, unless it is switched off or the console structure changes.

4.6.11 The Snapshot Scope Editor .....



Pressing the **Scope** button expands the panel to display and edit the scope for one snapshot, indicated by a light band linking the snapshot list to the scope. The scroll buttons in the centre of the panel move the scope editing up and down the snapshot list.
If the **Preview** button is pressed the scope for the next snapshot in the list is displayed.

4.6.12 Channel Scope .....

The input channels which are included in each snapshot can be set by pressing the **Touch Faders To Select** button and touching the required faders which will be added to the list (touching a fader again will remove it from the list).
Press the **All Channels** button if the snapshot is to be global.
If the **Exclude** button at the bottom left of the panel is pressed then the snapshot will apply to all the channels which **are not** on the list.
Note: If both All Channels and Exclude are highlighted, the snapshot will have no effect on any input channels.
Channel scope is not applied when recalling Banks (layouts).

4.6.13 Controller Scope .....

Input Channels

The first eight Controller scope buttons relate to input channels only. The Panning scope includes Sub and Divergence controls if applicable.

Output Channels

The Matrix, Processors, Groups, Auxes and Main output buttons relate to all controllers for output channels including trim and limiter settings for individual stem signals.

Routing

The Input Routing scope button includes channel labels.
Inserts includes send and return routes, send gain, pre/post switch and Insert in/out.
Directs includes send route, send gain and pre/post switch.
Matrix and Processors scope buttons include both inputs and outputs.

Misc

Control Group Members includes Control Group label and a complete list of each group's members.

Banks

Each snapshot stores the current assignment for all controllers on the worksurface:
Fader banks currently assigned to input surfaces but not the names of these banks.
Which channel on each surface is assigned to EQ/Dynamics/Joystick controls.
Which rows of pans or auxes are assigned to rotaries.
The Master Fader Banks assignment.
Note: Banks are not intended to reproduce the exact screen states. Channel views and other panels' visibilities are not stored or recalled.

Relays

The sixteen red indicators below the Relay scope button represent the state of the relays which will be output when the snapshot is fired (**not** the current state). It is sampled at the time the snapshot is recorded and can be edited by clicking on individual indicators with the trackball.

Restrictions

Important Note: The following features are not included in snapshots:
The input channel stereo switch.
Talkback.
Channel Bank names.
Choice of Solo 1 or Solo 2.

4.6.14 Snapshot Timing .....

To automatically sequence the firing of Snapshots:

1) Select the Snapshot using the up/down arrows in the centre of the panel.

2) Press the **Fire Next After** button on the left hand side and enter a time in the boxes next to this button.

3) Activate the function by pressing the **Auto Sequence** button.

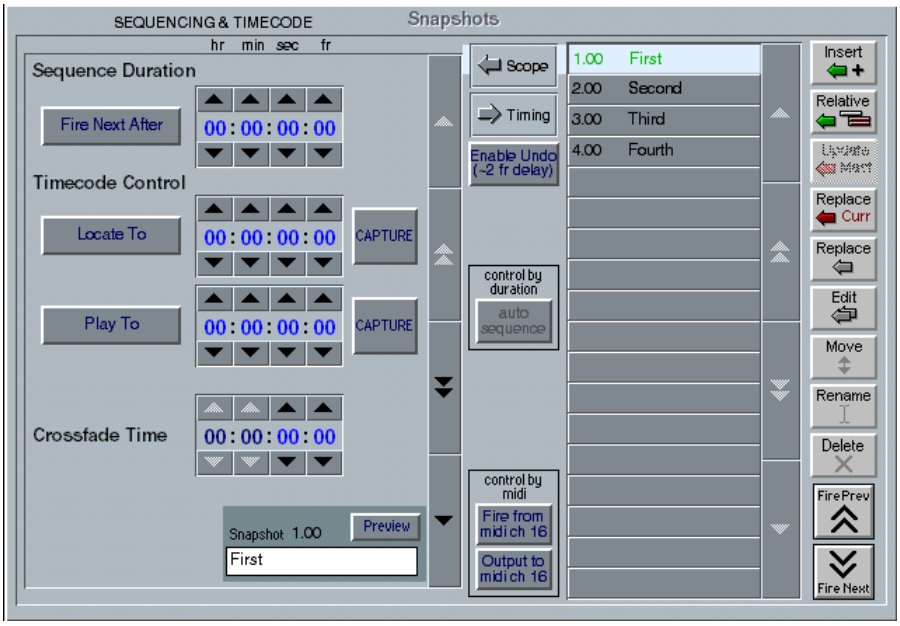
When this Snapshot is fired, the next Snapshot in the list will automatically be fired after the set time has elapsed.

Each Snapshot may also trigger a **Play To** and/or a **Locate To** timecode command.

Select the required Snapshot and enter a timecode value in the relevant box. Then activate the function by pressing the Locate To or Play To button.

When the Snapshot is fired, the specific timecode position will be located or played to.

You may activate both functions if you wish to locate to a specific position and then play from there to another position.



Crossfades

A crossfade time which is measured in frames can be applied to a Snapshot by adjusting the Crossfade Time in the Timing panel. Either use the Up/Down arrows or type a value into the box. The **x fade** light on the worksurface will be illuminated when the currently assigned Snapshot has crossfading enabled. The button next to it may be pressed to temporarily disable crossfading while recalling this snapshot but it does not change the crossfade time itself.

The Crossfade time is applied to faders and pans only (including sub level and divergence). A value of zero switches it off.

4.6.15 Snapshots and MIDI .....

There are two separate areas of MIDI control.

1) A snapshot can have a MIDI Patch attached to it, and will output that MIDI when fired. The MIDI Patch must be created separately in the **Setup Menu / MIDI Patches** panel. Switching the MIDI scope on pops up a panel prompting for a MIDI Patch button to be pressed, which will then be linked to the snapshot whose scope is currently displayed.

2) The firing of snapshots can be controlled by incoming MIDI messages on channel 16, and can cause these same messages to be output in addition to any MIDI snapshots included in (1) above.

The MIDI Input Control button allows the Snapshot system to respond to the following incoming MIDI messages:-

General Purpose Controller A (Controller 16); Values 0 to 127 will fire snapshots 1 to 128

General Purpose Controller B (Controller 17); Values 0 to 127 will fire snapshots 129 to 256

General Purpose Controller C (Controller 18); Values 0 to 127 will fire snapshots 257 to 384.

General Purpose Controller D (Controller 19); Values 0 to 125 will fire snapshots 385 to 510.

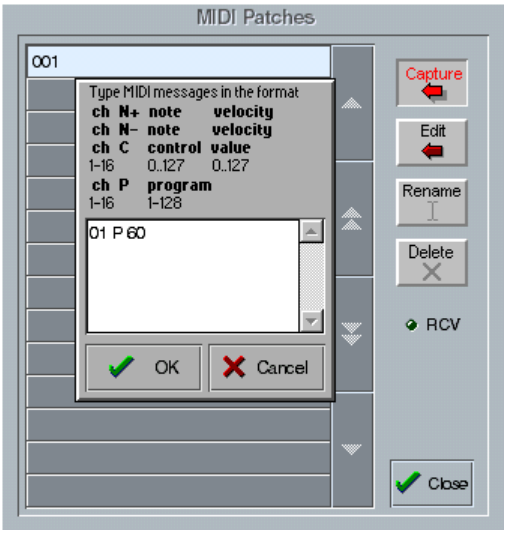
General Purpose Controller D (Controller 19); Value 126 will fire the previous snapshot in list.

General Purpose Controller D (Controller 19); Value 127 will fire the next snapshot in list.

MIDI Output causes the above messages 1 to 510 to be sent whenever a snapshot button is pressed. Previous and Next buttons do not output MIDI messages of their own.

4.6.16 MIDI Patches .....

Touching the **MIDI Patch** button in the **Setup** menu opens the MIDI Patches panel which allows any MIDI program change, controller change, note on or off message to be recorded and played back manually or against timecode.



This panel is implemented just like existing ("controller") snapshots.

MIDI is received and transmitted via the timecode card. An indicator on the MIDI panel shows when any MIDI data is being received.

When the **Capture** button is pressed a text panel is displayed and any incoming MIDI controller or program change information is recorded. There is also a list of required syntax for entering the text manually.

The captured text may be edited or new text entered into an existing patch by touching the **Edit** button and typing. This text is then compiled into the required stream of MIDI data when OK is pressed. Errors are reported at this stage.

The correct format for the messages is as follows:

Note On

A 2 digit MIDI Channel number between 01 and 16
N+ to indicate Note On
A note number between 0 and 127
A velocity value between 0 and 127

eg. 01 N+ 60 127

Note Off

A 2 digit MIDI Channel number between 01 and 16
N- to indicate Note Off
A note number between 0 and 127
A velocity off value between 0 and 127

eg. 01 N- 60 127

Program Change

A 2 digit MIDI Channel number between 01 and 16
P to indicate Program Change
A program number between 0 and 127

eg. 01 P 127

Control Change

A 2 digit MIDI Channel number between 01 and 16
C to indicate Control Change
A controller number between 0 and 127
An equals sign (Optional)
A controller value between 0 and 127

eg. 01 C 11 = 64

The words Program and Controller may be used or just their initial letters (case-insensitive). The equals sign is optional.

Comments are not stored although anything on a line after a semicolon is ignored. The first message in the editor is used as the snapshot name on the button label, but this may be edited.

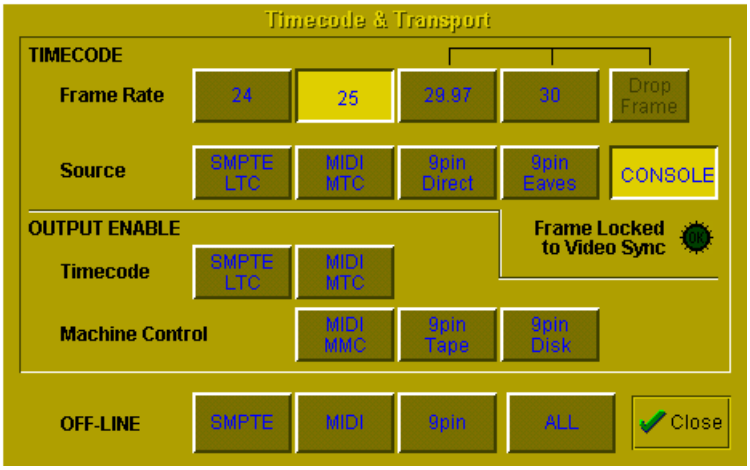
When not capturing, editing, renaming or deleting, the snapshot buttons will output the stored MIDI data when pressed.

MIDI Patches are stored in session files. The **New Session** panel has a Clear option for MIDI which deletes all MIDI Patches leaving an empty list.

4.7 Transport / Timecode Configuration

When the D5 is used in typical live sound applications there will be no time related control systems (timecode) or motion control (tape transport) connected. Synchronisation and machine control does not need to be considered.

This panel can be accessed by touching the **Setup** button on the Master screen and then touching the **Transport & Timecode** button.



Frame Rate

This must be set up for the frame rate used by your other equipment. You can select from four different basic frame rates, with a drop-frame option available for 29.97 and 30 fps.

Timecode Source

You can choose the **Console** option to make the console generate the master timecode for the setup, or you can choose to make the console "chase" timecode which arrives at one of the external sockets - **SMPTE (LTC)**, **MIDI (MTC)**, or **9-pin**. These external sockets are located on the console rear panel.

The **9-pin Eavesdrop** option requires a special 9-pin cable (See technical manual for details). The option is provided for installations where the 9-pin connection runs between two other pieces of equipment (for example, a video machine and DAW), but the console is required to chase this timecode. 9-pin does not normally allow more than a single direct connection between two machines, but using the Eavesdrop cable, you can make the console "listen" to the timecode passing between two other machines, and to sync to and display this timecode on the worksurface.

Note that if you are using 9-pin Eavesdrop mode, you cannot use any of the options for direct 9-pin connection.

Timecode Output Enable

Whether the console is operating as timecode master or deriving its timecode from another device, you can choose to route a timecode signal out from the MIDI (MTC) and/or SMPTE (LTC) sockets. If timecode is being received from another device it is regenerated before being routed to the output.

Machine Control Enable

The console can only send Control signals if you have enabled a Machine Control output. This can be MIDI Machine Control (MMC) and/or 9-pin Disk or Tape. Note that you cannot output 9-pin control if you are using the Eavesdrop option to read timecode.

MIDI Machine Control has limited transport features, supporting only the Play, Record, FF, Rewind, Stop and Locate functions. 9-pin control supports Shuttle and Jog functions.

Off-line Buttons

The configuration panel allows you to temporarily disable all timecode and transport control to any combination of outputs. The **ALL** button disables all timecode and machine control output - this is especially useful to prevent external machines trying to chase the console timecode.

Video Sync Lock Indicator

By connecting a video or black/burst signal to the video frame sync input on the worksurface rear panel, you can provide an external frame sync for the timecode. If the console is acting as timecode master or regenerating timecode, the frame boundaries in the timecode are then locked to those on the incoming video signal. If the lock is operating, the green indicator on the panel lights up to indicate this.

4.8 Audio Synchronisation

NOTE: If you are running an Optocore system, the console can only currently sync to Optocore at 48KHz therefore Optocore must be selected as the sync source. If you are only using MADI connections, Master must be selected as the Audio Sync source.

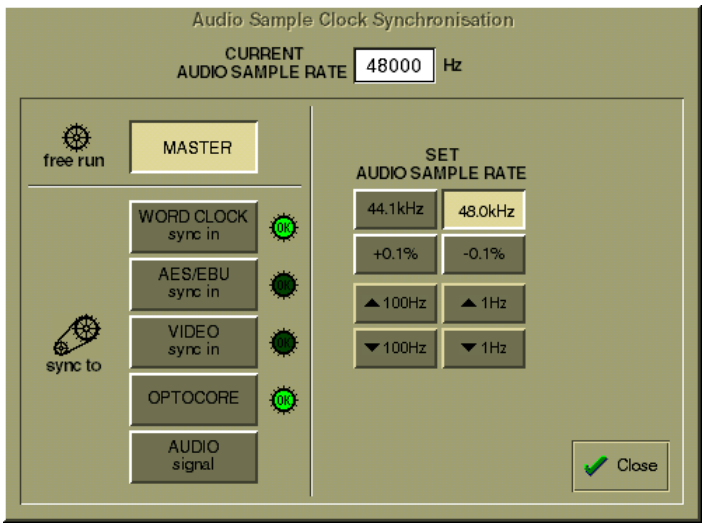
When the D5 is used with only analogue signals connected to both inputs and outputs synchronisation does not need to be considered.

The mixer will operate in a self contained manner, operated as master sync source, usually at 48KHz, see below for setting this. This will be the case even if some of the external equipment is in fact digital eg. digital delays, as long as their connections are analogue. From a system point of view this is the simplest mode of operation.

However as the D5 offers digital audio interfacing and therefore synchronisation must be considered, if this is to be used.

To ensure glitch-free audio, digital signals must be correctly synchronised using a "Word Clock" or "Digital Sync". The D5 console can act as Master, generating the word clock for other digital units in the system, or it can slave to an external digital sync input. External sync can be derived either from a dedicated sync unit, or from an incoming digital audio signal connected via an AES/EBU or MADI signal input.

The digital sync source will usually be set up when the console is installed, but it can be altered using the **Audio Sync** button in the **Setup Menu**. Pressing this button displays the Audio Sample Clock Sync control panel:



4.8.1 Internal Sync - Console As Master .....

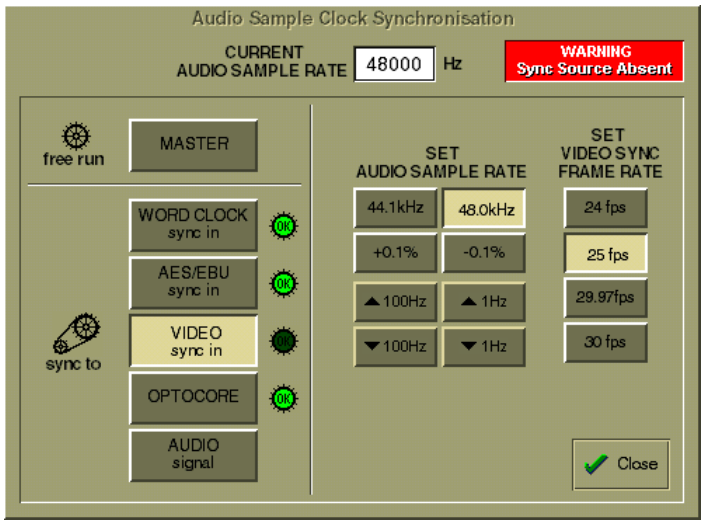
If you choose to use the console as the master sync source, you can select a standard sample rate with the 44.1KHz or 48KHz buttons and the adjust it if necessary in steps of +/- 0.1% or +/- 100Hz and 1Hz.

4.8.2 External Sync .....

WARNING! Operators should be aware that it is normal for a misclocked or unclocked digital audio system to produce loud, random noises. This can be damaging to external systems, especially large PA systems. Take care to disable such systems until the digital sync has been properly established and proved to be stable.

When you choose to sync to an external source, the control panel will immediately try to find the sync source you specify, and display a warning if no sync can be found, as shown in the illustration below.

The presence of a valid sync source is indicated by the green OK lights, not by the button. If the selected sync source should disappear, this panel will automatically be displayed with the warning message.



4.8.3 External Sync Sources .....

Word Clock and AES/EBU

The worksurface rear panel has connectors for Word Clock and AES/EBU inputs, either of which can be used as the master sync source by pressing the appropriate on-screen button - note that the AES/EBU worksurface input is for sync only, and cannot be used for audio.

Video Sync

Also located on the worksurface rear panel is the Video Sync input. Although this carries only a frame boundary signal, the console can generate a full digital word-clock from it. This means that when you choose to sync to the video signal, you have to choose the sample rate you want to generate between frame boundaries, in just the same way as when the console is providing the master sync.

Sync to Audio Signal

Any of the console's digital audio inputs can be selected as sync source. If you choose the Audio Signal option in the Sync control panel, you can then choose any input signal group and number, in just the same way as the audio component of the signal is selected as the source for a console input channel. When you have selected a signal group, the panel displays a green "OK " light to indicate when a signal in that group carries a valid sync source.

Please note the Digico's experience shows by far the most trouble free master sync source will be an AES/EBU signal (from the AES sync input or audio input). Word clock is second best and video is the more difficult source to implement.

4.8.4 Sample Rate and Conversion .....

The default sample rate for the console is set up at installation, and it is this sample rate which will be used when the console is operating as the master digital sync source. If the console is synchronised with an external digital audio unit, the sample rate used by the external unit becomes the master sample rate for the system.

Sample Rate Convertors

The AES/EBU Rack Modules are equipped with input Sample Rate Convertors (SRC). By default these are switched on at all times.

These allow the console to synchronise incoming digital signals of differing sample-rates, to avoid the glitching which occurs when signals with different sample-rates are mixed.

SRC also allows the same sample rate but different clock phase to be connected without problems (such as systems locked to external video sources).

SRC is also provided on the AES/EBU outputs. By default the outputs are locked to the console rate, however other rates can be preset to specific outputs, for example to allow a 44.1KHz output to a CDR from a console running 48KHz.

Switching of both the input and output SRC is not adjustable from the mixer screens but is configured in the socket setup file of the control computer, as this requires careful consideration of clocking issues within the system as a whole. For most users the default setup will work for the majority of applications.

Chapter 5
Effects and Insertable Processing Channels

5.1 Configure Effects

If The Effects and/or Processing Channel modules are not active, touch **Setup / Service / Configure Hardware** button to open the DiGiConfig program, select the console that you want to configure by pressing the relevant **This** button, then tick the relevant boxes at the top of the panel and press **OK**.

The optional effects section provides up to 6 different effects modules.

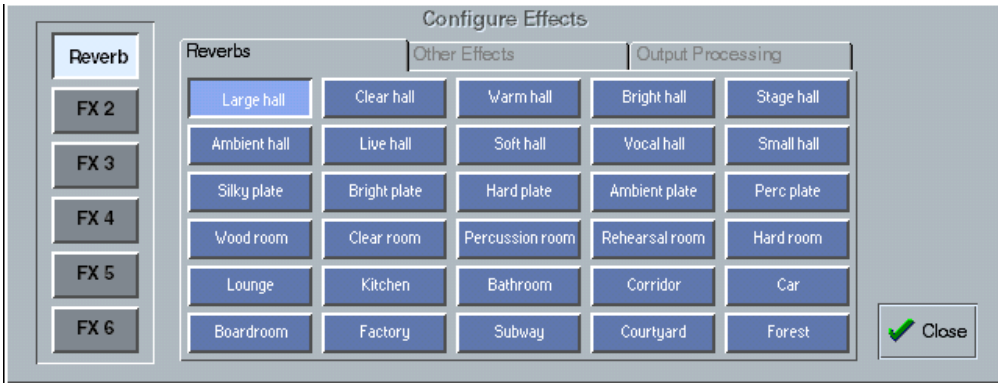
FX1 is always a stereo reverb unit

FX2, 3 and 4 can be configured as reverbs or any of a selection of other effects.

FX5 and 6 can function as effects modules but can also provide Output Processing on stereo, LCRS or 5.1 output busses or Graphic EQ.

5.1.1 Selecting Effects .....

Touching the **Configure Effects** button in the **Setup** menu on the Master Screen opens the following panel:



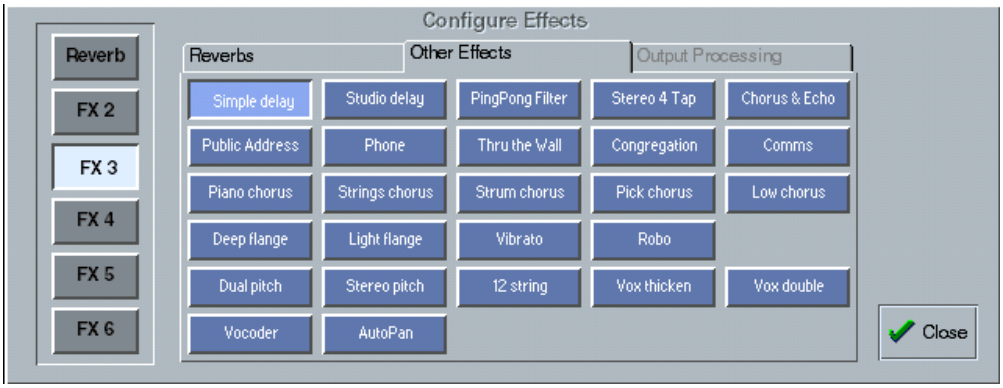
Touch one of the buttons on the left to select an effects module and assign an effect to it by selecting from the grid of buttons labelled with the effect names.

Reverb (FX1)

Selection of an effect for the first module labelled **Reverb** can only be made from the first page of 30 reverb effects.

Other Effects (FX2, FX3 and FX4)

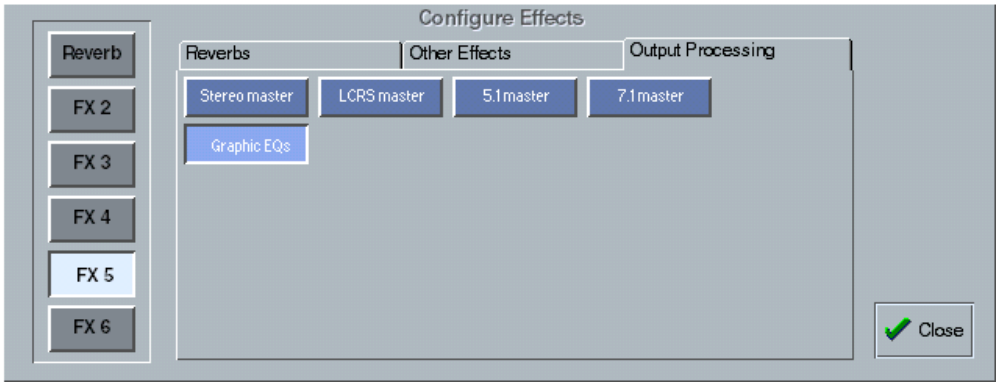
Selection for modules 2, 3 and 4 can be made from a similar list of reverb effects but by selecting the tab labelled Other Effects there are further choices including delay, chorus flange and pitch shifters.



Output Processing and Graphic EQ (FX5 and FX6)

Selection for modules 5 or 6 can be from the Reverb or Other Effect lists but the Output Processing tab also becomes available and you may choose the type of signal that you wish to process or apply mono or stereo Graphic EQ.

The processing options are Stereo, LCRS, 5.1 or 7.1 or up to 12 mono Graphic EQs.

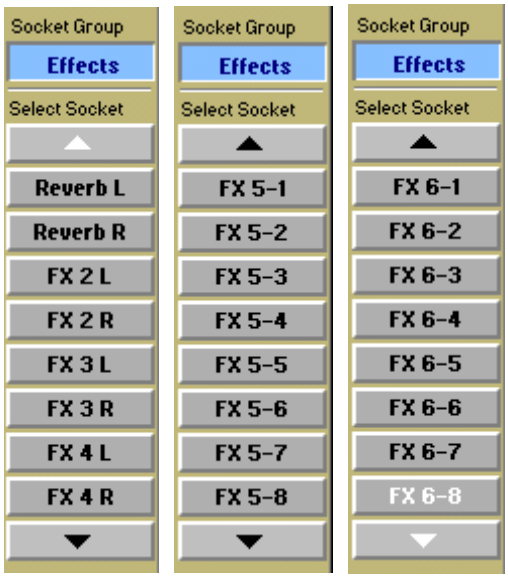


Output Processing consists of input and output gain, 3 band compression and limiting and 4 band EQ for each channel.

Graphic EQ consists of 12 independent 28 band EQ's.

5.1.2 Effects and Routing .....

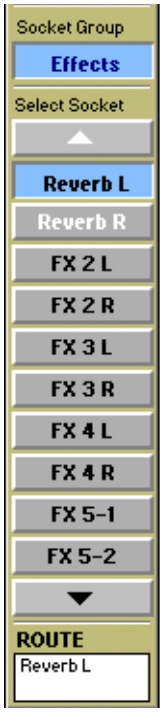
Signals can be routed to the effects modules from Direct Outputs, Insert Sends, Auxiliary Outputs and Group Outputs. An output routing Socket Group named Effects which contains the list of all the effects modules' inputs appears in the output socket routing panel.
In a similar way, the returns from the effects modules appear in a signal group named Effects in the input socket routing panel.



This group contains left and Right sockets for FX 1 to 4 and 8 sockets each for FX5 and FX6. Therefore FX5 and FX6 can be used for output processing on stereo or surround busses.

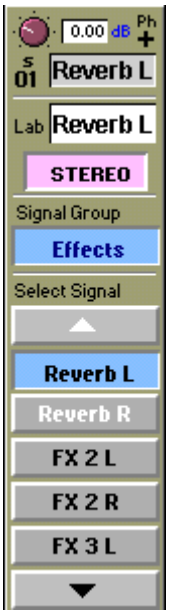
5.1.3 Effects and Auxiliaries .....

Touch the relevant auxiliary bus on the Master Screen to open it and then touch the Routing box beneath the meter to show the output socket routing.
Select the effects socket group and then the output which you require eg Reverb L
Note: If the auxiliary is stereo, selecting Reverb L will automatically route the left and right signals to Reverb L and Reverb R.



To Effects

The output of the Reverb module must then be monitored in a channel by opening the input routing screen, selecting the Effects signal group and then selecting Reverb L from the signal list. Touch the **Stereo** button to monitor Reverb L and Reverb R in the same channel.



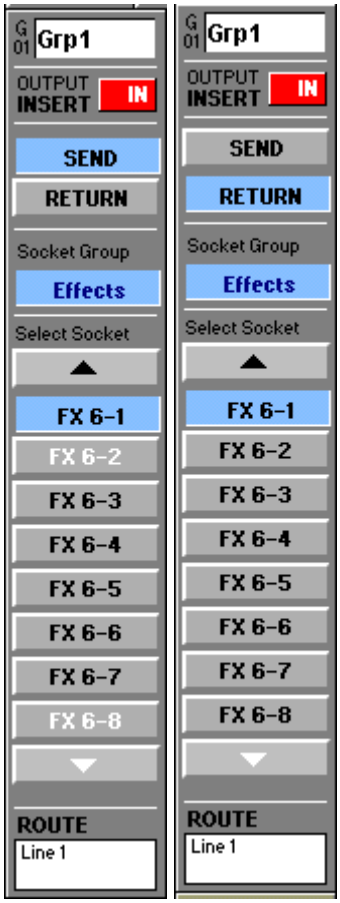
From Effects

5.1.4 Output Insert .....

In the buss master routing panel there is an **Output Insert** facility that can also be used to route signals to effects and processing. This is particularly useful if you wish to use FX5 or FX6 to process the output of a buss.

In this situation the output should be routed to its normal destination but it will be diverted through the Effects module for processing.

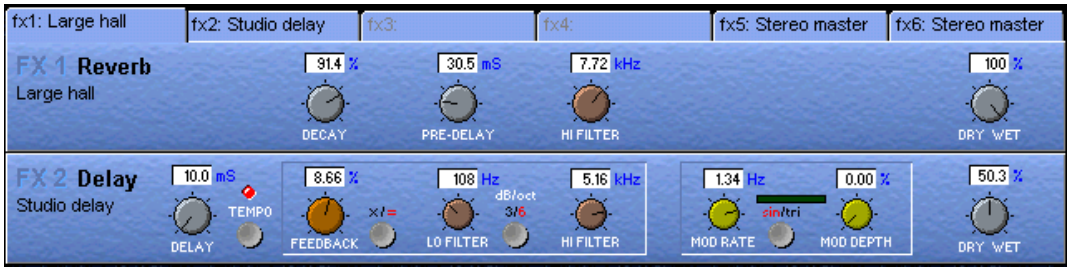
Touch the **Send** button and select the input to the required effects module, then touch the **Return** button and select the output from the same module. Then touch the **Output Insert** button to switch it on.



5.2 Effects Control

5.2.1 Effects Parameters .....

Touching the **Effects** button in the Master Screen opens the following panel:



Touch the tabs at the top of the panel to select the effect that you wish to adjust. Normally, two effects modules are shown in the panel but the output processing module uses the whole panel on its own.

If the name on the tab is greyed out, an effect type has not yet been assigned **(See 5.1.1 - Selecting effects)**.

The effects parameters available will differ according to the type of effect chosen.

To adjust a parameter touch the on screen control that you wish to change and use the **Matrix rotary and switch** on the right of the master worksurface.

They can also be adjusted by moving the trackball horizontally whilst holding down the left button.

5.2.2 Output Processing Parameters .....

If you are using FX5 or FX6 as output processing modules the appearance of the Effects Control panel will depend on the size of the master that you have selected eg. Stereo, LCRS or 5.1

Stereo Master

Successive presses of the button in the lower left corner shows each of 3 sets of controls but the **Trim** and **In/Out** controls are global and appear on all of the panels.

Input Normalising

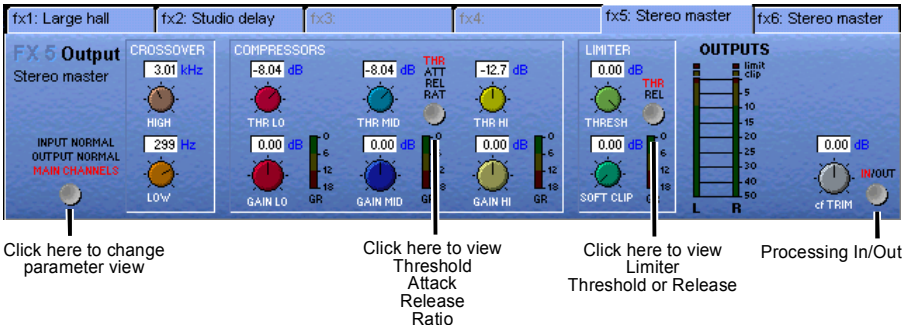
Provides Input **Gain** and **Phase** controls for the left and right signals.

Output Normalising

Provides Output **Gain** and **Phase** controls for the left and right signals.

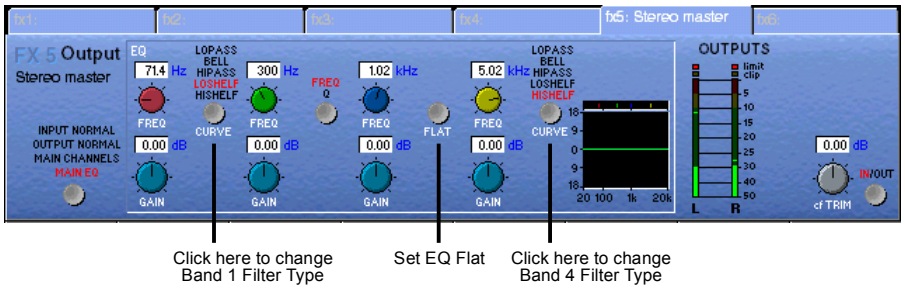
Main Channels Dynamics

Provides **Crossover** adjustment, **3 band compression** and **Limiting.**



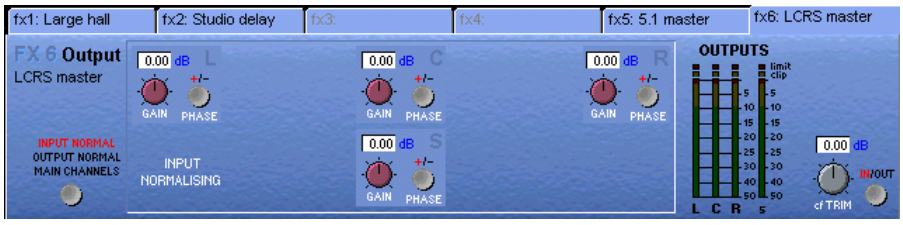
Main EQ

Provides **4 Band EQ** with adjustable Filter Types on Bands 1 and 4.



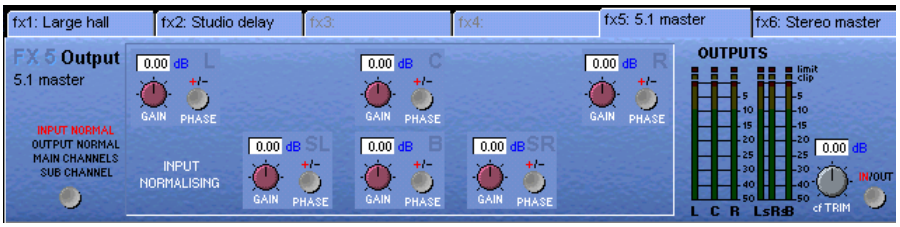
LCRS Master

The controls for an LCRS Master are the same as stereo (See previous section) but the Input and Output Normalising panels allow separate Gain and Phase control for each of the four signals.

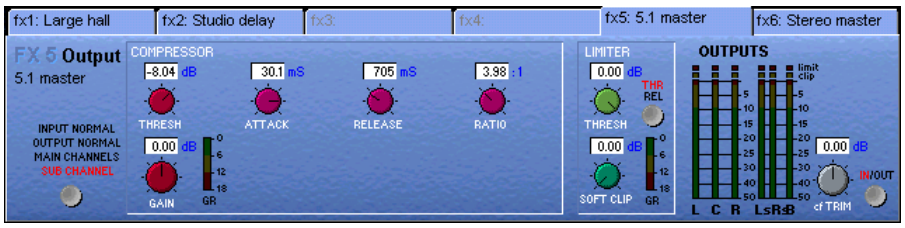


5.1 Master

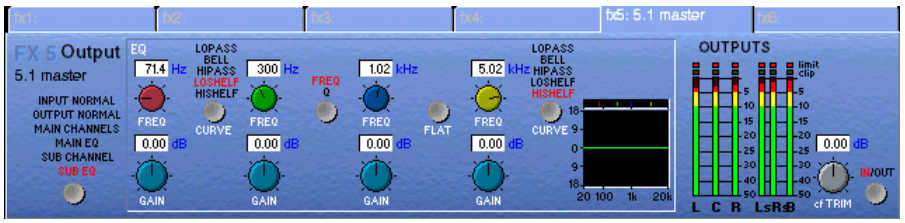
A 5.1 Master provides separate Input and Output Normalising for each of the six signals and in addition the **Sub Channel** has its own Compressor, Limiter and 4 Band EQ.



Sub Channel Dynamics

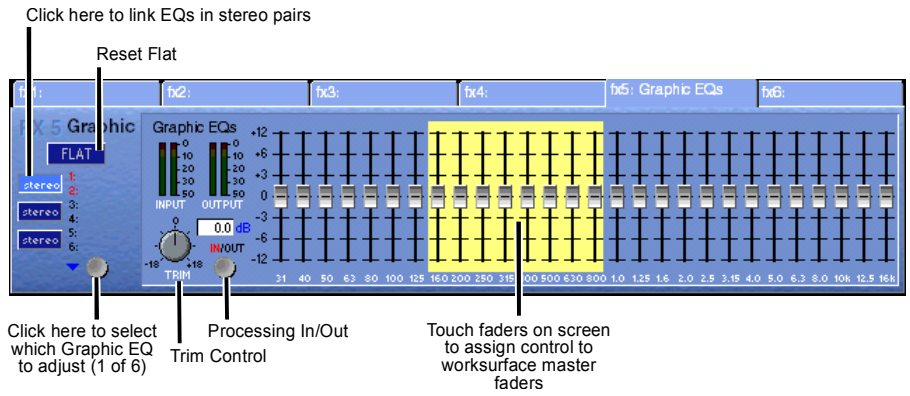


Sub Channel EQ



Graphic EQ

The controls for the 12 Graphic EQs are as follows:



If a stereo source is being processed the EQs can be linked in pairs - 1 and 2, 3 and 4, 5 and 6.

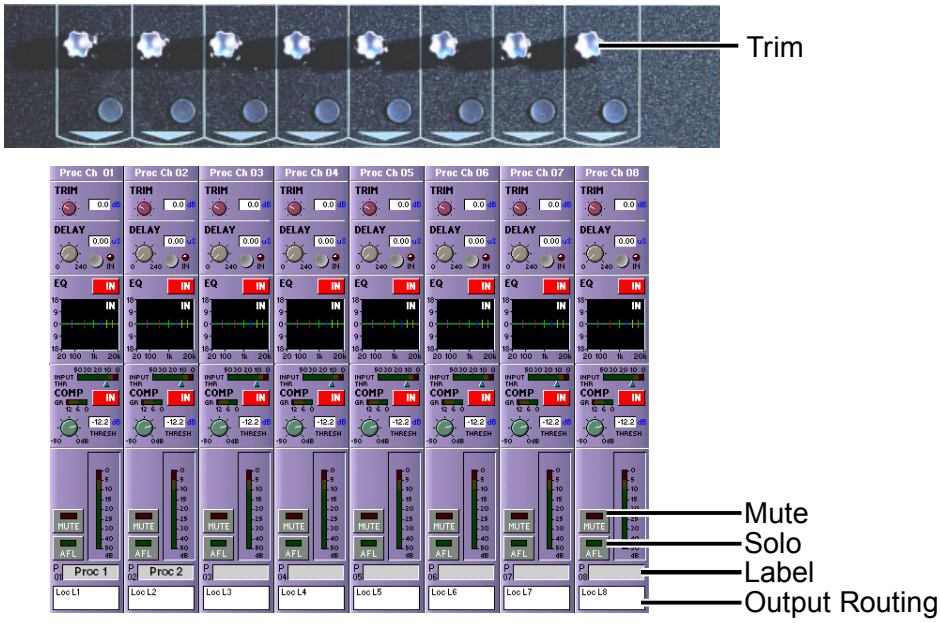
When connecting channels or busses to the Graphic EQs each unit will appear in the Effects socket group as a different number.

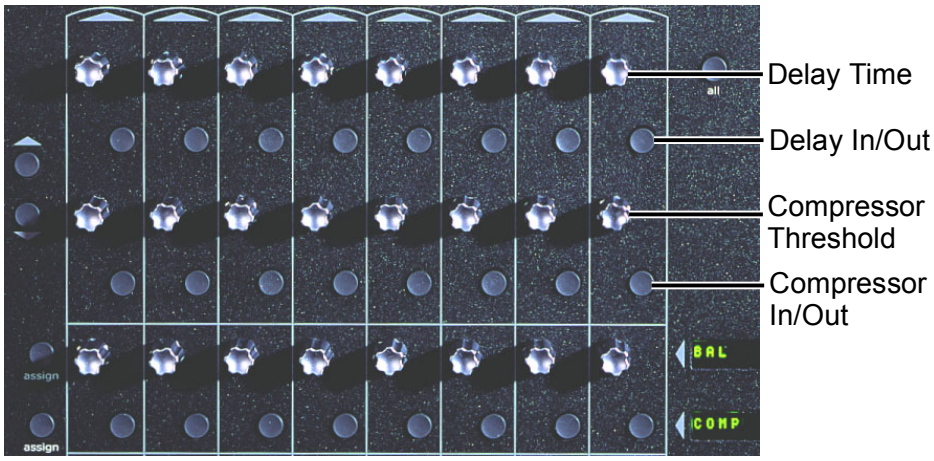
If FX 5 is configured as a Graphic EQ the six units are FX 5-1, FX 5-2, FX 5-3, FX 5-4, FX 5-5 and FX 5-6.

If FX 6 is configured as a Graphic EQ the six units are FX 6-1, FX 6-2, FX 6-3, FX 6-4, FX 6-5 and FX 6-6.

5.3 Processing Channels

If you have activated the 32 Processing Channels in the DiGiConfig program (Setup Menu / Service / Configure Hardware), four of the console's Channel Fader Banks will contain panels like the one pictured below. They will initially be labelled Pr 1-32 in blocks of eight.



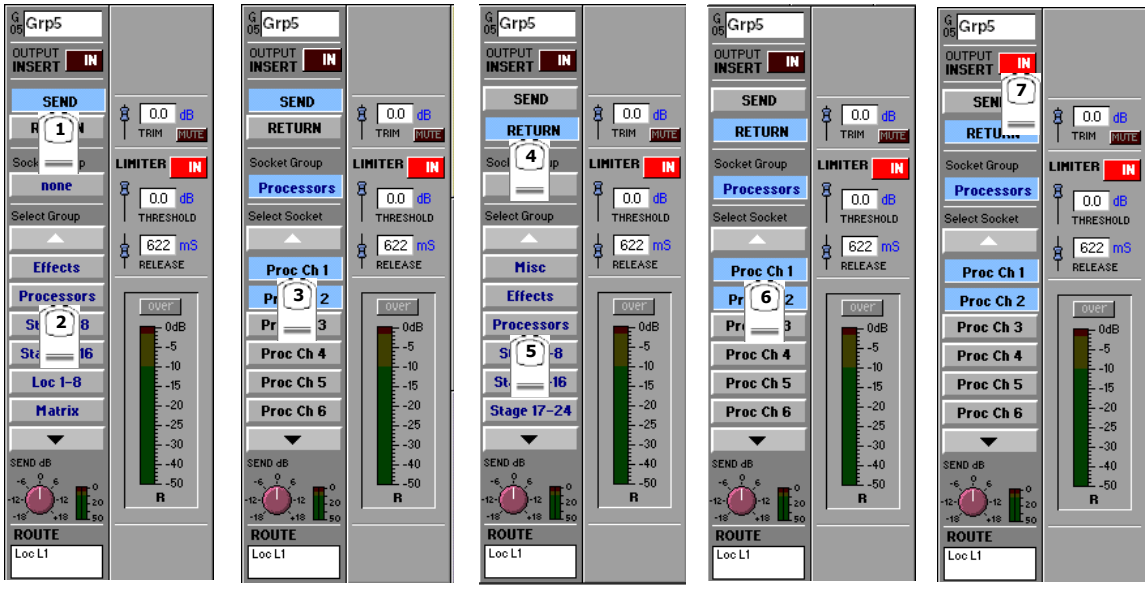


These channels provide Trim, Delay up to 240ms, Compression and 6 Band Parametric EQ and may be inserted into the signal path via Channel Direct Outs and Insert Points, Group, Auxiliary and Matrix Outputs or Insert Points

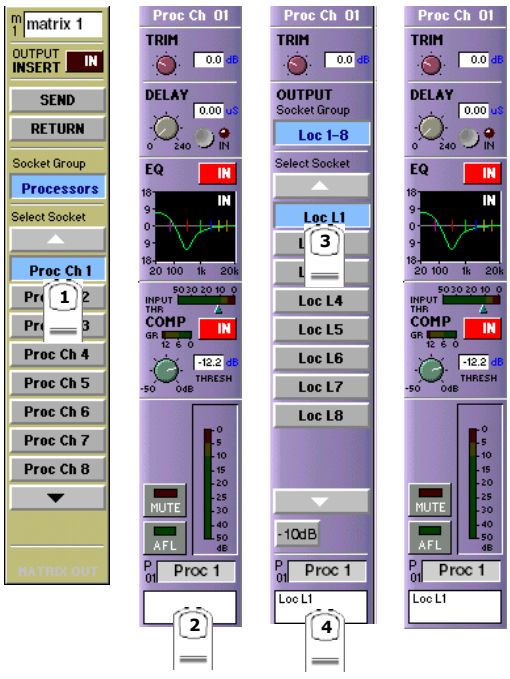
A Socket Group called **Processors** will be available in all of the routing panels which contains the inputs and outputs of these channels.

5.3.1 Inserting Processing Channels .....

To insert a Processing Channel on an output using an insert point.
Open the relevant Group, Auxiliary, Matrix or Master routing panel then:
1) Touch the **Insert Send** button to view the list of output socket groups.
2) Touch the **Processors** socket group button to view the list of sockets.
3) Touch the button relating to the **Processing Channel** that you want to use (Proc Ch 01/02 in the example below).
4) Touch the **Insert Return** button to view the list of input socket groups.
5) Touch the **Processors** socket group button to view the list of sockets.
6) Touch the button relating to the **Processing Channel** that you want to use (Proc Ch 01/02 in the example below).
7) Touch the **Output Insert In** button to turn it on.



Alternatively, the signal may be sent to the Processing Channel via normal output routing and the Processing Channel can be routed to an output. In the example below, Matrix 1 output is routed to Processing Channel 1 and the processed signal is then routed to Local Line 1.
1) Open the output routing panel for the Buss, open the Processors Socket Group and touch the relevant Processing Channel button.
2) Touch the bottom of the Processing Channel's on screen strip to open the output routing window.
3) Touch the relevant output routing socket (Loc L1 in the example below).
4) Touch the bottom of the Processing Channel's on screen strip to return to the standard view.
Note: With this method, the Group, Auxiliary or Matrix output can be routed to multiple Processing Channels and these channels can in turn be routed to multiple outputs as required.

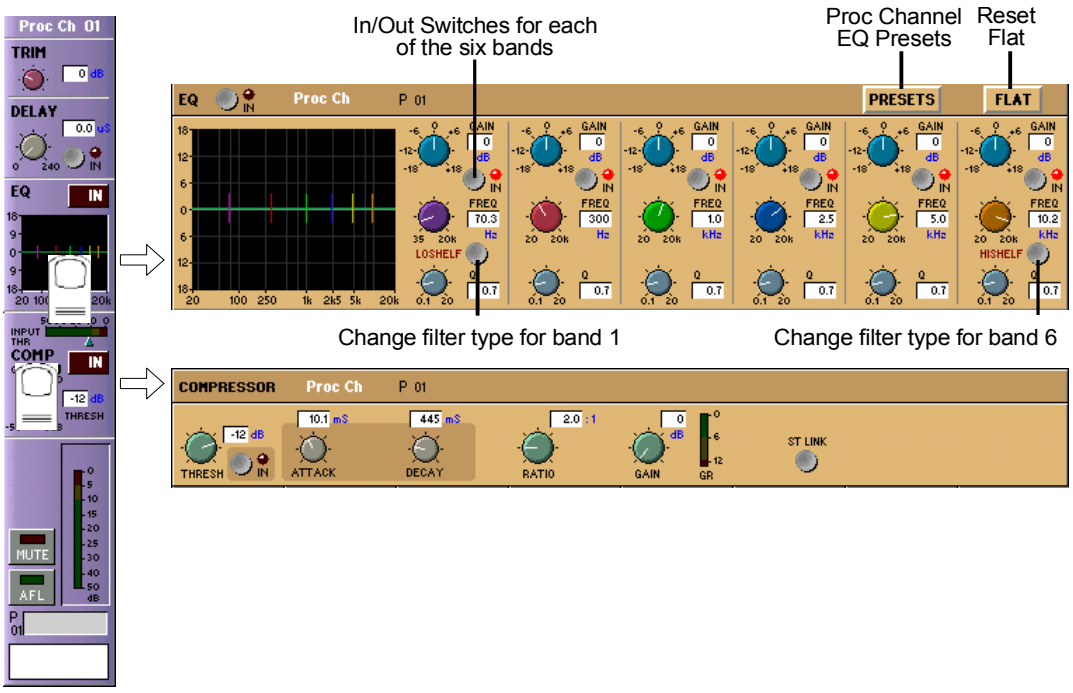


5.3.2 Processing Channel Controls .....

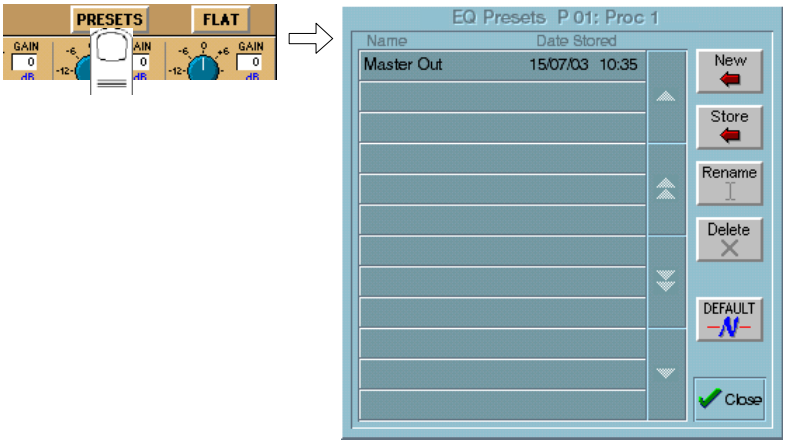
Processing Channel controls can be accessed from the worksurface (See Diagram in Section 5.3) but by touching either the EQ graph or the word "Comp" on the screen, further parameters become available.

When the EQ panel is expanded, the 3 rows of rotaries and switches below the channel screen are assigned to the 3 rows of controls in the EQ panel.

When the compressor panel is expanded the first row of rotaries and switches below the channel screen is assigned to the row of controls in the compressor panel.



Touching the EQ panel **Presets** button opens the Processing Channel EQ library and this functions in the same way as standard Channel, EQ and Dynamics Presets.



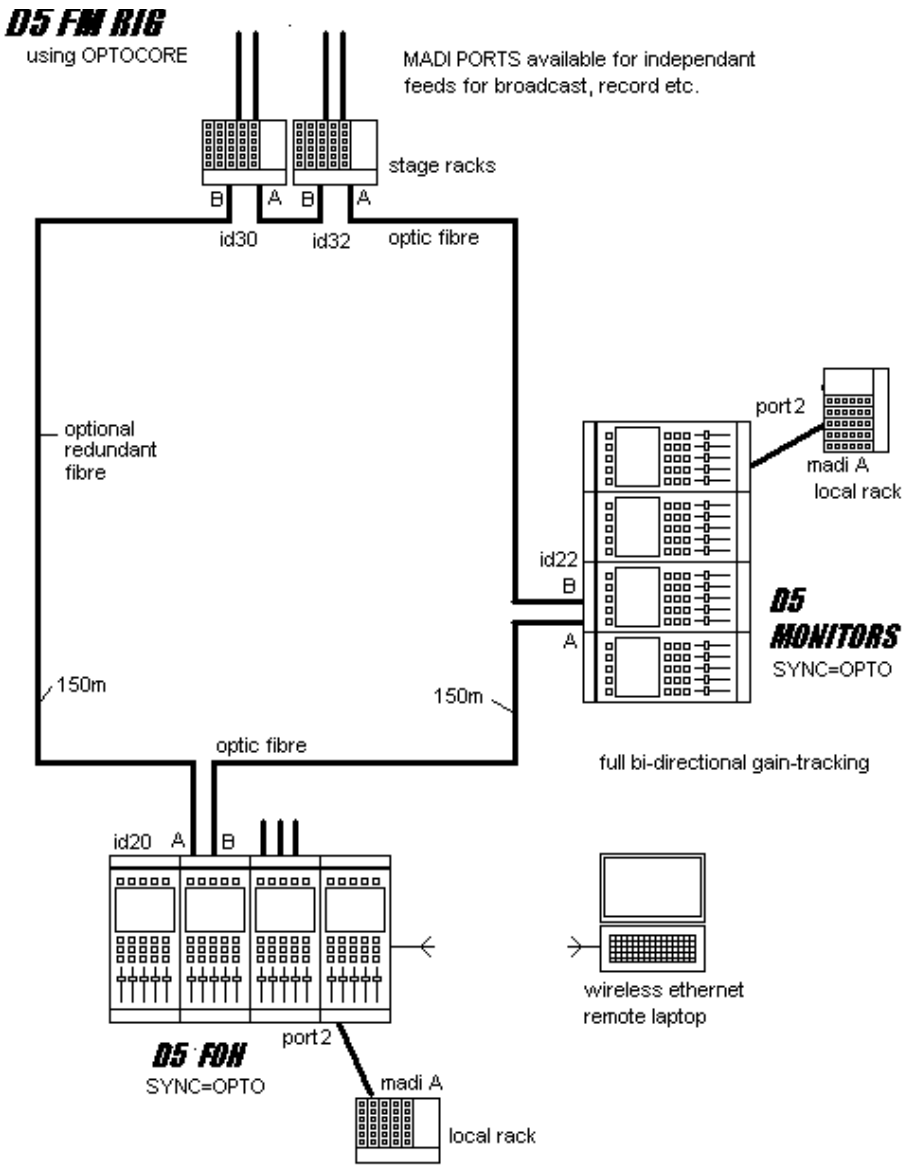
Chapter 6
Multiple Console Setups

6.1 FMX Setup

Front of House and Monitor consoles (with 1 local rack each) may independently share input signals from 2 stage racks and have individual control of input gains with the use of Gain Tracking.

The local racks may be completely different but the sockets file on each console must contain identical entries for the shared racks.

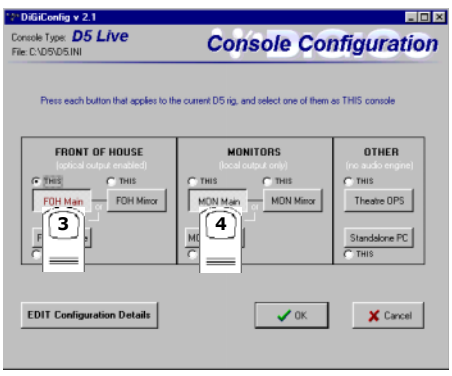
The rest of the configuration must match the hardware of the actual console but the two consoles do not need to be identical.



To set up the hardware configuration open the **DiGiConfig** program in the **System / Service / Configure Hardware** menu. D5 software will automatically close to enable configuration changes.

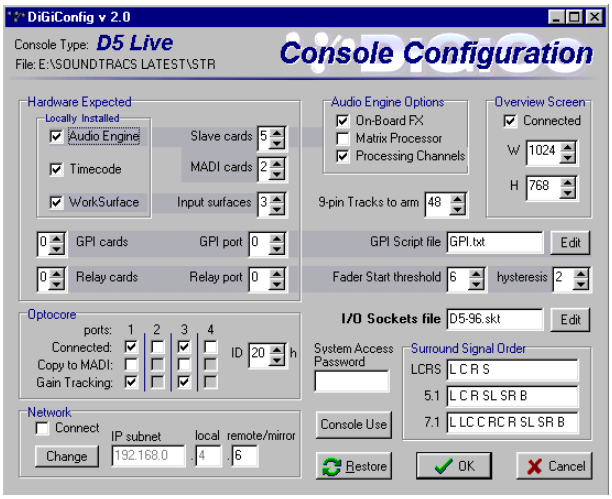
Select all the consoles in the rig (**FOH Main** and **MON Main**) and then select the console that you are configuring by pressing the **THIS** radio button. You can check the configuration by pressing the **EDIT Configuration Details** Button but clicking **OK** will confirm the setup and return to D5 software. Repeat this process for the other console.

Note: Both consoles should have Optocore selected in their Setup / Audio Sync panels.

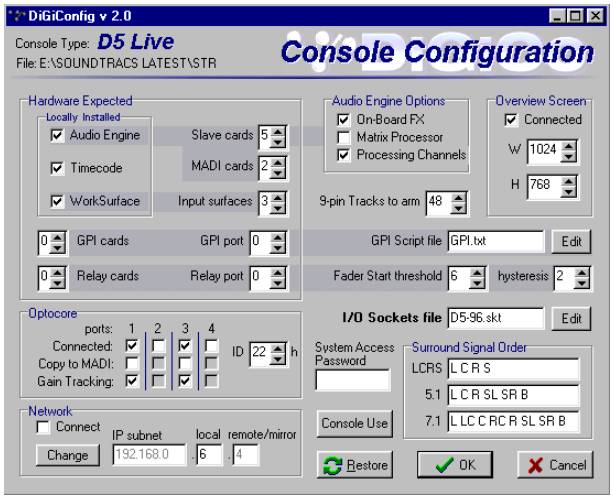


The following configuration details will have been created:

FOH Console Details



Monitor Console Details

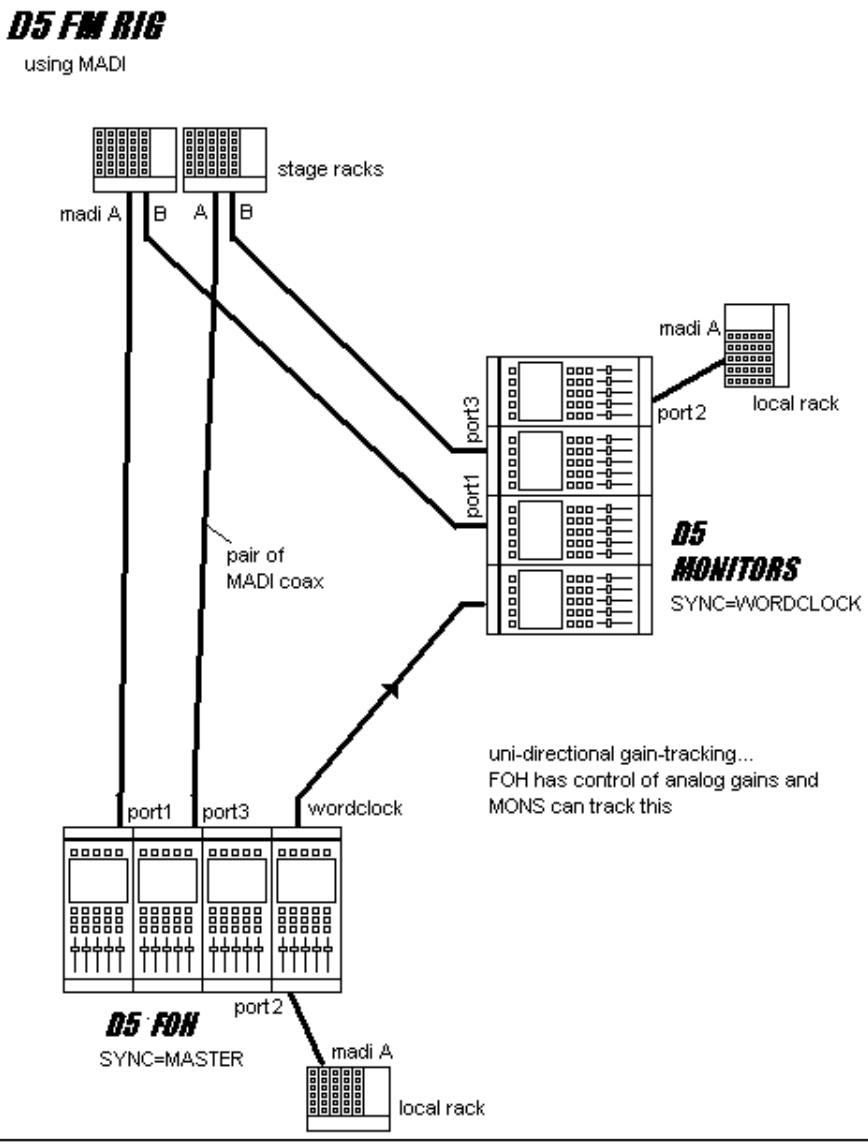


Note that Gain Tracking has been switched on for both consoles and the Optocore IDs are 20 (FOH) and 22 (MON). In this example, other details are the same but this is not necessarily always the case.

MADI Connections

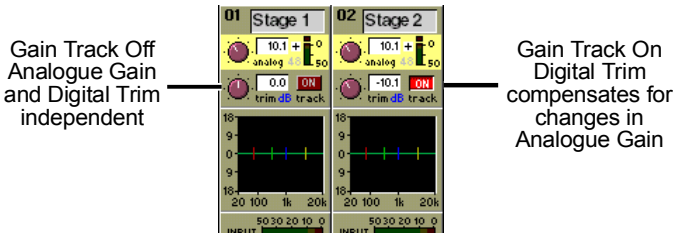
If the consoles are to be connected via MADI, the setup would be as follows but Gain Tracking would only be unidirectional with the FOH acting as Master and the Monitor console tracking the changes.

Note: This configuration requires a Word Clock connection from the FOH to the Monitor console. The FOH console should be set to Setup / Audio Sync = Master and the Monitor console to Setup / Audio Sync = Word Clock.



6.1.1 Gain Tracking .....

With the Optocore connection, Gain Tracking can be bidirectional (both users can control it).
Each Input Channel has a **Track On/Off** switch next to the **Digital Trim** control. If this is switched off the Analogue Gain and Digital Trim are completely independent but if it is switched onfor both consoles , any change in the Analogue Gain by either user is compensated by an opposite Digital Trim. This means that the overall level remains the same on both consoles when the Analogue Gain is adjusted.



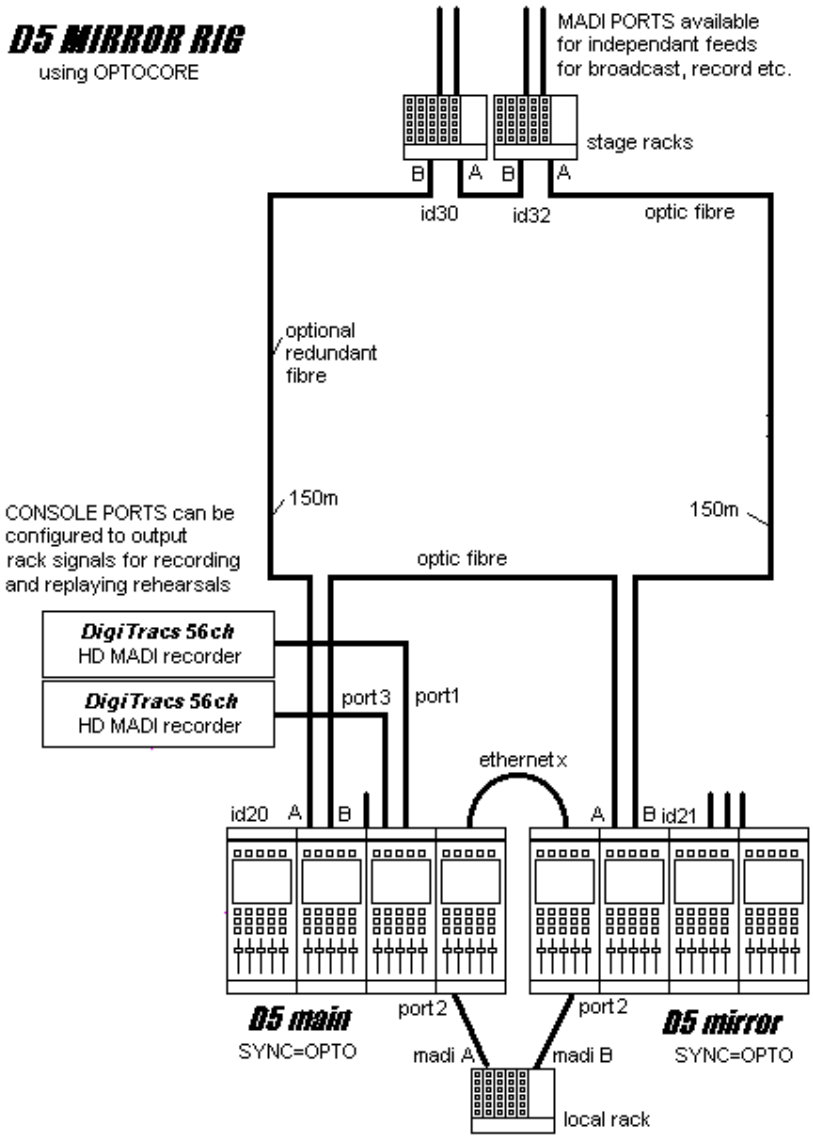
6.2 Redundancy and Mirroring

6.2.1 Redundant Optical Loop .....

If an additional Optocore cable is connected to complete the loop between all connected devices, the redundant cable will ensure that a single break in the Optocore connection will not result in a loss of function.
This applies in single or multiple console operation.

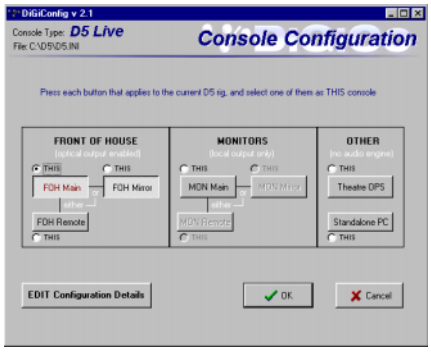
6.2.2 Redundant Mirror Console .....

In this example there are 2 consoles with 1 local rack sharing signals from 2 stage racks may be networked and thereby track each other. If one console fails, the other takes over. The two consoles must be identical in hardware and software.
When the consoles have been connected and started their **Sessions** must be **Synced** using the **SYNC CONSOLE** function on the **System / Security & Network** panel. There are also options to **Sync Sockets Files** and **Presets.**

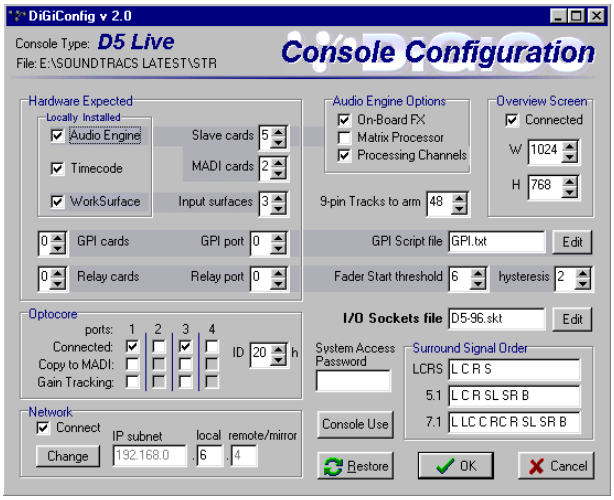


Having ensured that the consoles are identical in both hardware and software, run the **DiGiConfig** program in the **System / Service / Configure Hardware** menu. D5 software will automatically close to enable configuration changes.

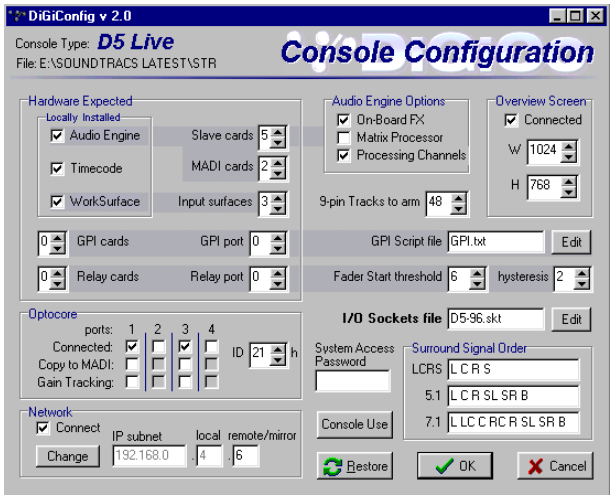
Select all the consoles in the rig (**eg. FOH Main** and **FOH Mirror**) and then select the console that you are configuring by pressing the **THIS** radio button. You can check the configuration by pressing the **EDIT Configuration Details** Button but clicking **OK** will confirm the setup and return to D5 software. Repeat this process for the other console.



FOH Console Details



Mirror FOH Console Details



Note that the Optocore IDs are 20 (FOH) and 21 (MON). In this example the network details show that the FOH Main console has an IP address of 192.168.0.6 and the FOH Mirror console has an IP address of 192.168.0.4. All other aspects of the two consoles are identical.

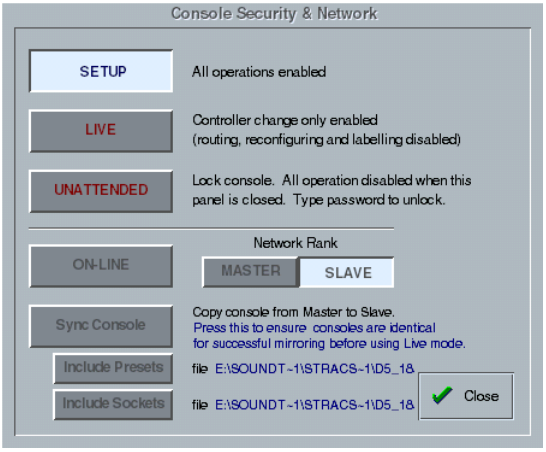
Assuming that both consoles are running, open the **Setup / Security and Network** panel on each console and check the **Network Rank** of **Master** for the Main console and **Slave** for the mirror console. Then press the **On-Line** button and the consoles will check that both are using identical session files before linking the controllers (The number of channels and buss structure, the session filename and the session title are all compared). If this is not the case, press the **Sync Console** button to ensure that the console sessions are identical. You may also include the Presets and the Sockets files in the sync procedure by pressing the relevant buttons.

Therefore there are three states:-

Off-Line: No communication at all between mirrored consoles.

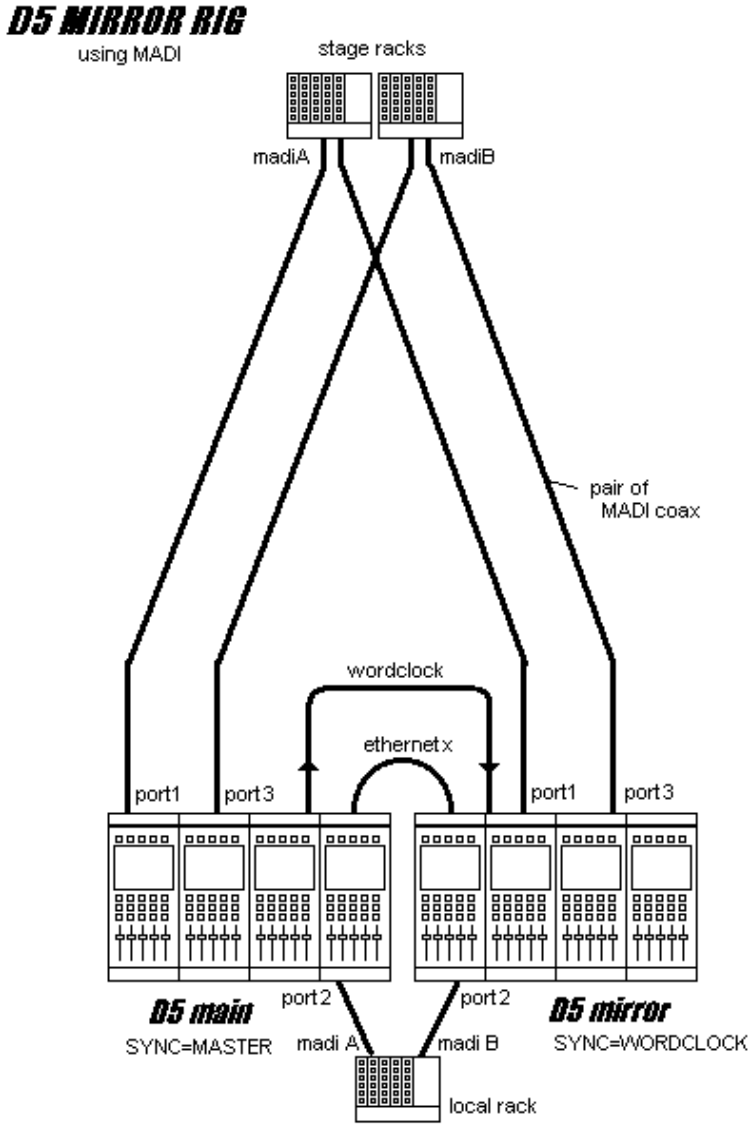
On-Line: Sync Session is permitted but no other operations are mirrored.

Linked: Controllers, routing, labelling and snapshot commands are all mirrored.

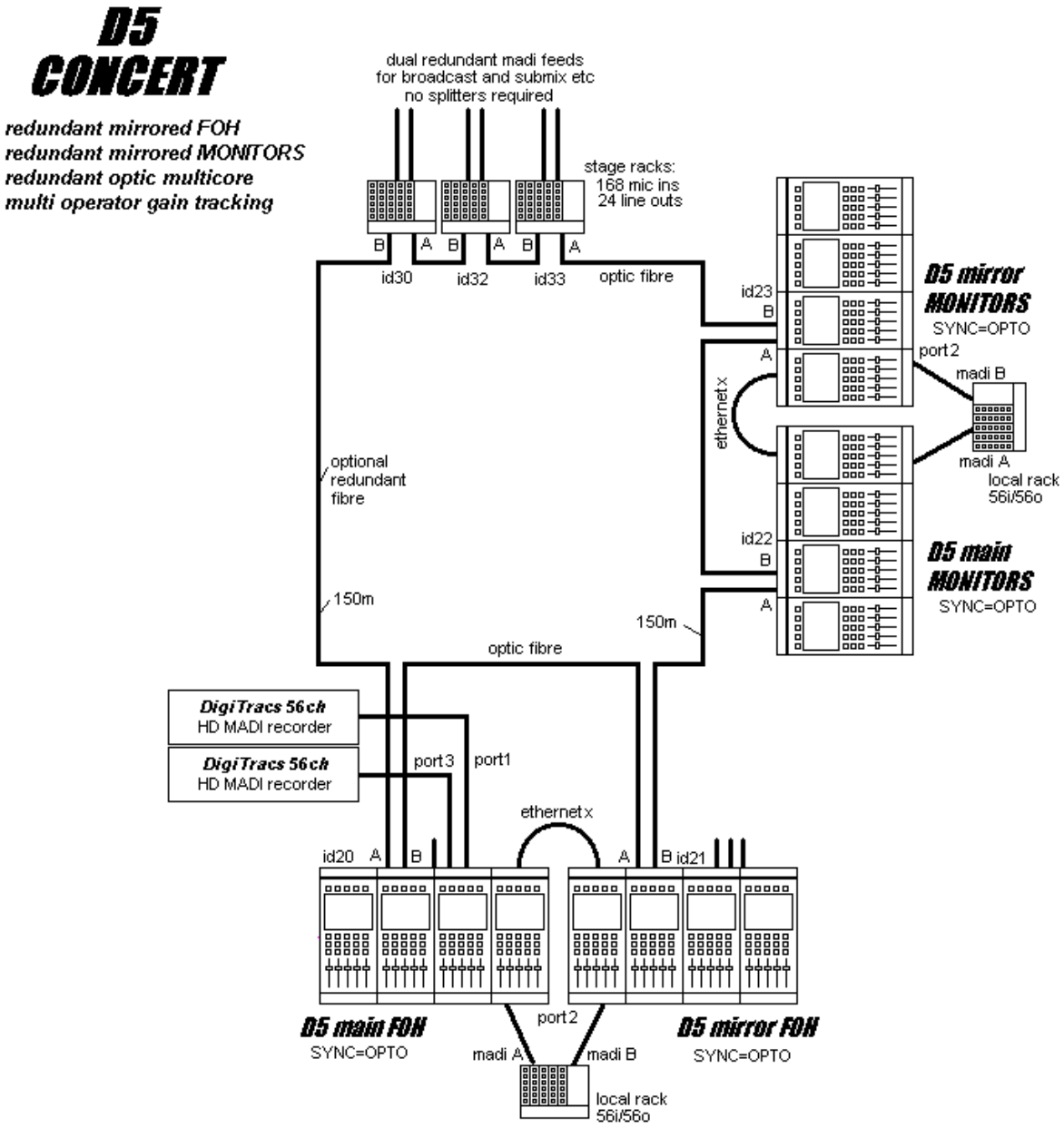


Once the consoles are synced, any console operation which results in a mismatch between Master and Slave (eg switching a channel from mono to stereo) will result in an message appearing on screen. This indicates that the sessions should be resynced and this can be done by pressing the **Sync Session** button in the **Session Files** menu.

The following diagram shows the connections required to set up a mirror console with MADI connections:



The following diagram shows the connections required to set up a full rig with redundant mirror Front of House and Monitor consoles, a redundant optical loop and multi-operator Gain Tracking.



Chapter 7
Troubleshooting

7.1 Troubleshooting

If you are experiencing any difficulty with D5 operation, please check the following commonly asked questions and answers.

I am trying to select input sources for my higher numbered channels but the channel numbers are "greyed out".

The "greyed out" number indicates that the channel is unavailable. This is a normal console function which occurs when you have one or more channels set to stereo mode or some of your group busses are routed directly to the Master buss.

The number of console processing channels is fixed so by setting one to stereo you are actually using a second one as well.

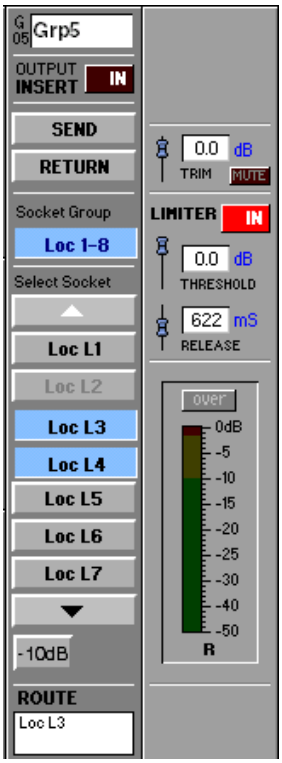
Routing a group buss directly to the Master buss uses the same number of channels as there are buss signals eg. 2 for a stereo buss or 6 for a 5.1 buss.

The highest numbered unused channels are taken first.

I am trying to route to specific output socket but it appears to be "greyed out" in the socket list.

This indicates that the output is already being used. Touching the "greyed out" name will show a message to indicate what it is being used for.

*If the message says that **"the socket is not in use but cannot be used for the first (left) signal of this channel"** you may be trying to route a stereo or surround buss but there are not enough consecutive output sockets available. For example:*



Stereo Group 5 is routed to Loc L3 and 4 but Loc L2 appears "greyed out" as well. A stereo buss cannot be routed to Loc L2 and 3 as Loc L3 is already in use. It can however be routed to Loc L1 and 2

If you were routing a mono buss, Loc L2 would be available.

The console has crashed but when it tries to recover the session there is still a problem.

The session file may have become corrupted. Reload the D5 software whilst holding the keyboard "Shift" key. A Recover and Restart panel will appear which provides different reboot options.

Note: If you hold the Shift key while Windows is rebooting the Surfaces.exe program will not start and the console will not function correctly. Therefore, load the D5 software then Quit To Windows using the System / Service Menu and then load the D5 software again whilst holding the Shift key.

I have an input source selected for a channel but there is no audible signal.
Check that the channel insert is not switched on. If it is switched on but no insert return signal is selected then there will be no audible signal in that channel.
The channel high and low pass filters are not having any effect on my audio signal.
These filters have no effect on internal signals as they are preprocessing.
Internal signals consist of:
1) Talkback mics, tone and noise generators (Misc Input Group).
2) Buss results used as input sources (any input source name preceded by the symbol ~).
3) Returns from the optional internal effects module (Effects Input Group).

I do not seem to have as many Channel Sends available as I should.
The number of Channel Sends available can be seen in the Diagnostics panel under the System menu.
They are used by Direct Outputs, Channel Insert Sends and the internal Effects module.
If you are using the internal Effects module:
2 Channel Sends will be used for each stereo effect.
If FX5 and FX6 are set to Output Processing, anything between 4 (2 x stereo masters) and 16 (2 x 7.1 masters) Channel Sends will be used.

How do I tell if a channel is stereo or mono when the input screen is in its standard view?
Stereo channels have two on-screen meters and there is also an "s" below the channel number at the top of the screen.

How can I change the Pre/Post setting for a single auxiliary send?
To change this setting, use the button beneath the auxiliary send control but make sure that the send is set to minimum. Using the same button with the send turned up will switch the auxiliary on and off.

I cannot see the Width control for a stereo channel on the screen.
Use the Screen Scroll buttons to move the highlighted line down. The Width control is in the last position after the Pan control.

I want to trigger a noise gate with an external source but when I press the Key button, the key source panel doesn't appear.
Check that you haven't selected a dynamics configuration which includes filters. The external trigger is only available for the first dynamics configuration where the filters are not used.

The audio is sometimes interrupted when I use the channel EQ.
Switching the Channel LPF or HPF Filters in will briefly interrupt the audio in that channel.

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